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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

GOVT. DOCUMENTS
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APR 13 1981

NEW DOCUMENT PRESENTS ASSESSMENT OF NATIVE PLANT VULNERABILITY

Office of Endangered Species
Staff Botanists

The Service recently provided State and Federal agencies, ecological consultants, plant conservationists, botanists, and other interested parties a new document which describes the current vulnerability of U.S. plants to extinction. This most recent notice of review for plants was published in the December 15, 1980, *Federal Register*.

The notice names nearly 3,000 plant taxa native to the U.S. which are being considered for listing as Endangered or Threatened species under the amended Endangered Species Act, and indicates their State distributions. It also provides a list of almost 800 plant taxa which were previously being considered for listing under the Act, but are presently presumed either extinct; not good species, subspecies or varieties; or more abundant or widespread than previously believed, and/or not subject to identifiable threats.

The December notice refines and updates three previous notices, and constitutes a current national assessment of U.S. plant status. It is based on 14 months of intensive collaboration by Service botanists with plant experts across the country, and reflects over six years of active field work and other research on vulnerable plants. It replaces published national assessments from 1975 and early 1978 and, in some cases, reports new State records of these rare species.



Photo by T. Wendt/Smithsonian Collection

Background

Initial endangered species legislation provided protection only for vertebrate animals, the special need to focus on the conservation of plants in danger of extinction not being recognized by legal provision until 1973. The 1973 Act directed the Secretary of the Smithsonian Institution to prepare a report on Endangered and Threatened plant species and to recommend necessary conservation

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NOTE ABOUT THE STAFF

Just a few words to update you on the status of old and new members of the BULLETIN staff. Dona Finnley, who has been our editor for the past three years (June 1977), has left that post to pursue further studies in biology. I would like to take this opportunity to thank Dona for the fine work she has done, editing and planning the BULLETIN, and to wish her well with her studies. Although school will occupy most of her time, Dona will contribute occasional articles for the BULLETIN.

Thanks also to Morey Norkin who, as Acting Editor, has kept the BULLETIN together for the past four months. Morey will continue on with the BULLETIN, assisting Clare Senecal who has assumed, with this issue, the responsibilities of Editor. The new editor welcomes your continued interest and comments regarding our official Program publication.

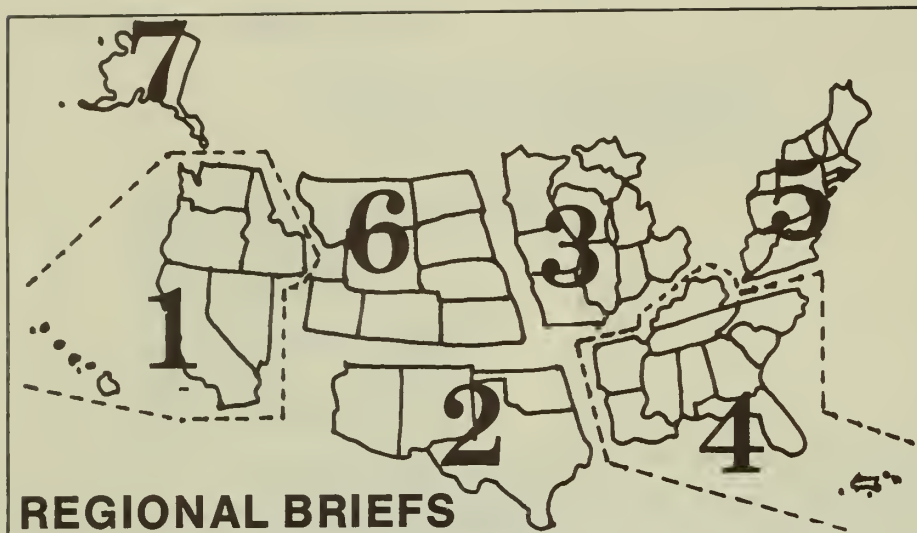
John L. Spinks, Jr.
Chief, Office of Endangered
Species

Greenman's hexalectris, (*Hexalectris grandiflora*): This orchid occurs in the Trans-Pecos region of Texas and also in Mexico. The Service requests additional data on this category 2 plant.

measures. The Smithsonian report, published in January 1975 as House Document No. 94-51, included a list of more than 3,000 native plants thought to be extinct, threatened, or endangered.

The Service published a notice on July 1, 1975 (40 FR 27823), announcing that the Smithsonian report had been accepted as a petition under the terms of the Act, and that the plants named in the report were being reviewed for

Continued on page 4



Endangered Species Program regional staffers have reported the following activities for the month of December.

Region 1. The Pahrump Killifish Recovery Plan has been printed and is

available from the Fish and Wildlife Reference Service, Unit I, 3840 York Street, Denver, Colorado 80205.

Surveys indicate that 50 pairs of Bell's vireo (*Vireo bellii*) nesting in an area in San Bernadino County, California, pro-

duced 75-100 fledglings. Approximately one-third of the nests have been parasitized by cowbirds (*Molothrus ater*).

Region 2. Service personnel spent 10 days on the northwest coast of Costa Rica working on projects involving the Olive (Pacific) Ridley sea turtle (*Lepidochelys olivacea*) and green sea turtle (*Chelonia mydas*).

A film crew from ABC-TV's 20/20 spent a day filming at Bosque del Apache National Wildlife Refuge for a story on a recent program.

Region 4. An 18-acre site supporting the Endangered bunched arrowhead (*Sagittaria fasciculata*) has been registered with the South Carolina Heritage Trust Program. The bunched arrowhead is known to occur in only two locations, a small area in Greenville County, South Carolina, and a site in Henderson County, North Carolina. The South Carolina site, registered by the trustee for the estate of Dr. T. E. Coleman, harbors possibly one-fourth of all the known remaining plants. Under the Trust Program, the plant will be assured of at least short-term protection.

Divers from the Cave Research Foundation recently observed and verified identification of six specimens of the Kentucky cave shrimp (*Paleomonias ganteri*), a proposed Endangered species. The specimens were found in association with the subterranean Echo River in Mammoth Cave National Park, and were the first to be seen alive in 13 years.

Region 5. After 39 years of trying, the Service has acquired the Snow tract adjacent to Bombay Hook National Wildlife Refuge in Delaware. This 154-acre tract, home for one of the last pairs of nesting bald eagles (*Haliaeetus leucocephalus*) in Delaware, is a combination of hardwood timber and farmland which will buffer the nest.

The annual planning meeting for peregrine falcon (*Falco peregrinus anatum*) releases took place on December 9, 1980, at the Brigantine National Wildlife Refuge. Plans are to increase coastal releases and releases in northern New England at natural sites. Logistical arrangements are proceeding well.

Service personnel met with Army Corps of Engineers staff in Salem, Virginia, to discuss ways to minimize adverse impacts on the Roanoke logperch (*Percina rex*) and the orangefin madtom (*Noturus gilberti*), which might result from a proposed flood control project on the Roanoke River.

Region 6. A complaint has been filed in the United States District Court for the District of Columbia in *Cabinet Mountains Wilderness/Scotchman's Peak Grizzly Bears, et al. v. Peterson, et al.* The complaint involves a mineral ex-

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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ploration program approved by the Forest Service in the Cabinet Mountains Wilderness/Scotchman's Peak area of Kootenai National Forest in Montana.

The suit alleges that the Fish and Wildlife Service failed in its consultation with the Forest Service to further the purposes of the Endangered Species Act and the conservation of grizzly

bears. The plaintiffs seek a declaration that the defendants violated the National Environmental Policy Act and the regulations of the President's Council on Environmental Quality by not preparing an environmental impact statement prior to approving the drilling plan, and a declaration that approval of the drilling plan violates Section 7 of the Endan-

gered Species Act. The plaintiffs have requested an order enjoining the two agencies from permitting the American Smelting and Refining Company to continue its drilling program, at least until the defendants have complied with the requirements of the Endangered Species Act and the National Environmental Policy Act.

MARINE SANCTUARY CANDIDATES DESIGNATED

Three areas off Puerto Rico have been selected by the Commerce Department's Office of Coastal Zone Management (OCZM) as active candidates for designation as one or more marine sanctuaries. The areas are (1) the waters around Mona and Monito Islands, (2) the area off southwest Puerto Rico known as La Parguera, and (3) the waters around Culebra and Culebrita Islands and the Cordillera reef chain located off northwest Puerto Rico.

According to Edward Lindelof, Sanctuary Program Manager, OCZM, the Department of Commerce is working with the Department of Natural Resources, Commonwealth of Puerto Rico, to develop a management plan for the protection and management of these areas in the event that they are designated as marine sanctuaries. It is not yet known what restrictions on the recreational or other use of these areas will occur if this action is finalized.

The three candidate sites are known to provide important habitats for several Endangered species. The hawksbill sea turtle (*Eretmochelys imbricata*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*),

and loggerhead sea turtle (*Caretta caretta*) are all found within the proposed sites.

On October 22, 1980, the Fish and Wildlife Service proposed to designate several areas in the Commonwealth of Puerto Rico as Critical Habitat for the hawksbill sea turtle (see the November/December 1980 BULLETIN). These areas, which coincide with the OCZM proposal include Mona Island, Culebra Island, Isla Culebrita, and Cayo Norte. Mona Island is already designated as Critical Habitat for the federally protected yellow-shouldered blackbird (*Agelaius xanthomus*), Mona ground iguana (*Cyclura stejnegeri*), and Mona boa (*Epicrates monensis monensis*). On the same date as the hawksbill proposal the Service proposed the Monito gecko (*Sphaerodactylus micropithecus*), a species known only from Isla Monito, as Endangered with Critical Habitat.

It is expected that the marine sanctuary designation will compliment the Critical Habitat designations by providing additional protection and management to these areas. Both designations of marine sanctuaries and desig-

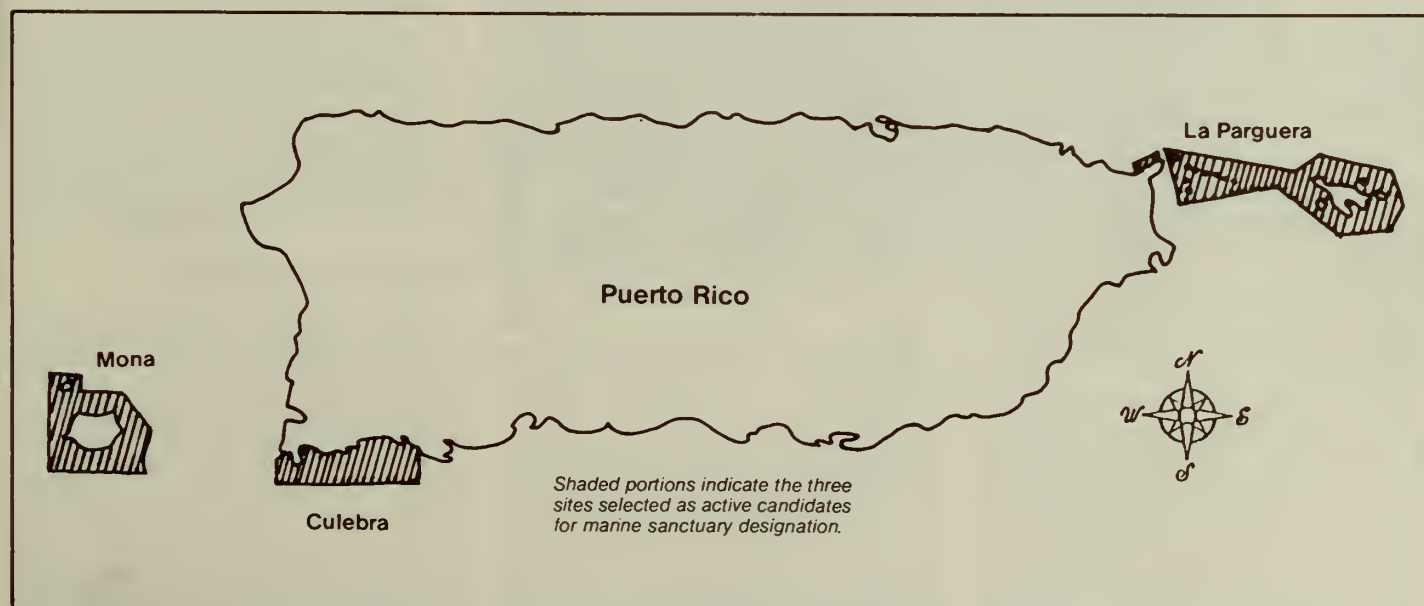
nation of Critical Habitat for these Puerto Rican sites were recommended by the World Conference on Sea Turtle Conservation in November 1979.

To finalize the marine sanctuary designation, OCZM must first prepare an Issue Paper in conjunction with the Commonwealth of Puerto Rico's Department of Natural Resources. Expected to be completed near the end of January 1981, the Issue Paper will describe the distinctive resources of the potential sites, the present and prospective uses, existing government programs for protecting those resources, alternative boundaries, management activities, and activities that might be regulated within a marine sanctuary.

In conjunction with the Issue Paper, workshops will be held to solicit views which will help OCZM determine whether any of the sites should be further considered for designation and whether changes in the recommendations should be made.

OCZM will prepare a Draft Environmental Impact Statement (DEIS) once it has determined that the proposed designation is appropriate. The marine sanctuary designation must be approved by the Governor of Puerto Rico and the President and will then be designated by the Secretary of Commerce.

The process is expected to be completed by November 1981.



NEW PLANT DOCUMENT

Continued from page 1

possible addition to the U.S. List of Endangered and Threatened Wildlife and Plants. One previous notice of review, which named four plants, had been published in April 1975 (40 FR 40823) in response to a petition. About 1,700 of these plants were subsequently proposed for listing under the Act on June 16, 1976 (41 FR 24523). Later, in 1977 (42 FR 40823), a third notice involving one plant was published.

Because of the provision of a 2-year limit for proposed rules in the Endangered Species Act Amendments of 1978 (P.L. 95-632), the 1976 proposal was mandatorily withdrawn in November 1979 (44 FR 70796) when final action had been taken to list only 56 of the plant species originally proposed. Withdrawal was required because of the expiration of the deadline for making such rules final, and was not related to the conservation status of the proposed taxa.

The present notice reflects the Service's current judgment of the probable status of all native plant taxa that were included either in previous notices or the 1976 proposal, as well as other taxa for which information has become available more recently. This action represents a Service commitment to the general Congressional intent of Section 12 of the Act, to continue a broad and detailed evaluation of the vulnerability of U.S. plants to extinction. Such preliminary notice of plant assessment by the Service will be provided to the public regularly so that land use planning can proceed with less surprise and potential conflict than would be the case if only proposed and final rules were relied upon.

1980 Plant Notice

Plant taxa are grouped in several categories in the new notice, in order to accurately reflect the Service's present evaluation of their conservation status. Categories 1 and 2 include those plants considered by the Service to be official candidates for Federal listing. Category 3 includes those plants not under consideration for listing.

Category 1 includes over 1,800 plants for which the Service presently has sufficient information on hand to biologically support their listing as Endangered or Threatened species. It also includes an additional 220 plants which are possibly already extinct, but which still may be located if intensive field work is undertaken. Because of the large number of species in category 1, and



Photo by Donald R. Kurz/Smithsonian Collection

White-fringed prairie orchid (Platanthera leucophaea): Once widely distributed over much of the mid-West, this category 1 orchid has experienced a serious decline resulting from alteration of its native prairie habitat. Remaining populations tend to be small and scattered. The species appears to depend upon fire to break dormancy in the plants and initiate growth and flowering. Large scale conversion of the mid-Western prairies into agricultural land and modern fire prevention have contributed to the decline of the species.

because of the necessity of gathering data concerning the environmental and economic impacts of listings and designation of Critical Habitats, it is anticipated that the development and publication of proposed and final rules concerning these species will require some years.

Category 2 includes nearly 1,200 plants for which information now in the possession of the Service indicates the probable appropriateness of listing as Endangered or Threatened species, but for which sufficient information is not presently available to biologically support a proposed rule. Further field study and biological research (in some cases including taxonomic research) will usually be necessary to determine the status of the taxa included in this category. It is hoped that the notice will encourage such research and investigation.

Category 3 includes nearly 800 plants no longer being considered for listing as Endangered or Threatened species. Such taxa are included in one of three subcategories, depending on the reasons for removal from consideration:

Subcategory 3A includes 51 taxa for which the Service has persuasive evidence of extinction. (45 of these were from Hawaii). If rediscovered, however, such species are likely to acquire high priority for listing.



Photo by W.S. Justice/Smithsonian Collection

White-wicky (Kalmia cuneata): This category 1 plant occurs in coastal plain and sandhill wetlands of North and South Carolina. It is threatened by rapid drainage and development of these areas.

Subcategory 3B contains about 200 names that, on the basis of current taxonomic understanding, usually as represented in published revisions and monographs, are either synonyms or forms and thus do not represent taxa meeting the Act's definition of "species." Such proposed taxa could be re-evaluated in the future on the basis of subsequent research.

Subcategory 3C includes about 550 plants that have proven to be more abundant or widespread than was previously believed, and/or that are not subject to any identifiable threat. Should further research or changes in land use indicate significant decline in any of these taxa, they may be re-evaluated for possible inclusion in categories 1 or 2.

Interim Protection Needed

The plants listed in categories 1 and 2 may be considered official candidates for protection under the Act and they should therefore be considered in environmental planning. Many of these candidate plants may eventually be listed as Endangered or Threatened species. However, the listing process is an extremely lengthy one. In the interim, voluntary protection may prove beneficial to many of these plants. The U.S. Forest Service and other agencies, as a matter of policy, provide consideration



Photo by John Fay



Dwarf iliau (Wilkesia hobbeyi): This category 1 plant is extremely local, being confined to a few acres of a steep ridge-side on the lee shore of the island of Kauai. It is potentially threatened by feral cattle and goats as well as the introduced black-tail deer. This species was first discovered in 1968.

Yellow meadowfoam (Limnanthes douglasii ssp. sulphurea): This category 1 plant is found only in seasonally wet areas on Point Reyes, north of San Francisco. Species of *Limnanthes*, or meadowfoams, are being investigated because of their potentially useful seed-oils.

and protection to candidate species as well as to those formally listed. Such efforts are encouraged and commended by the Service.

New Information Solicited

Further biological research and field study will be necessary to determine the status of some plants (particularly those in category 2), and the Service hopes that the notice will stimulate such research. Some taxa included in category 2 require further taxonomic research before their status can be clarified. Additional information concerning such taxa, especially that resulting from recent investigations, is particularly sought by the Service.

In some cases, although adequate data are now available to the Service to support rep proposal of species originally included in the expired 1976 proposal, such species cannot be repropoed for listing pending the receipt of sufficient new information warranting such action, as required by Section 4(f) (5) of the Act. The Service has interpreted the "new information" requirement to mean that such information must have been developed and received subsequent to the mandatory withdrawal of the original proposal on November 10, 1979. The Service requests that new information



Photo by James L. Reveal/Smithsonian Collection

Kodachrome twinpod (Lesquerella tumulosa): This yellow-flowered perennial is found only on white, bare shale knolls in Southern Utah, on public land managed by the Bureau of Land Management. The major threat to its survival is the removal of the knolls for road building materials. It is classified as category 1.

on the species named in this notice be submitted as soon as possible and on a continuing basis, either to the appropriate regional office or, if desired, to Washington.

Copies of the notice have been provided to a large number of interested parties and are available upon request from the proper regional office or the

Washington Office of Endangered Species. Similar compilations of the plant species treated in the notice, ordered (1) by family, and (2) by State, will be available as Brookhaven National Laboratory Reports. These can be obtained by writing: Dr. John Nagy, Brookhaven National Laboratory, BEAD Bldg. 475, Upton, NY 11973.

PREPARATIONS FOR NEW DELHI MEETING NEAR COMPLETION

Dates for the third regular meeting of the conference of parties to the Convention on Endangered Species of Wild Fauna and Flora (CITES) in New Delhi, India, have been officially set, after two prior schedulings, for February 25 through March 9, 1981. A sizeable provisional agenda, including many proposed amendments to CITES Appendices I and II, will be considered by delegates from 67 party nations.

The United States, by virtue of its membership on the CITES Standing Committee received advanced notice of the New Delhi provisional agenda, as amended to include additional items suggested by Australia, Canada, and the United States. This document appeared in the November 13, 1980, *Federal Register*. Some of the U.S. proposed negotiating positions are summarized in a more recent notice (F.R. 12/8/80).

Provisional Agenda

The current agenda includes 17 items (I-XVII); items I-X are procedural in nature and will not be discussed in this issue of the BULLETIN. Item XVII, elections of new members of the Standing Committee, is also procedural but should be noted because U.S. membership on the Committee expires at the New Delhi meeting. (The terms of the United Kingdom and Australia will also expire). The U.S. proposes to support Canada as its replacement.

Standing Committee Members

The nine-member Standing Committee is composed of a representative from one party country in each of six regions of the world, from the last host country of the regular meeting of the Conference of the Parties (Costa Rica) and from the next host country (India), and from the depositary country (Switzerland). In addition to the countries already named, Zaire, Nepal, and Brazil are the other regional members. The only two countries in the North American region that are CITES parties are the United States and Canada.

Comments from U.S. Public

In response to the Service's initial notice (F.R. 5/9/80) and public meeting (F.R. 6/20/80) regarding the agenda for the New Delhi meeting, information and comments on the provisional agenda were provided by: American Ivory Association, Defenders of Wildlife, Fur Conservation Institute of America, International Convention Advisory Commission (ICAC), Natural Resources Defense

Council, Inc., Society for Animal Protection Legislation, Southeastern Association of Fish and Wildlife Agencies, and State of Montana Department of Fish and Game. (A discussion of all U.S. suggestions can be found in the August 11, 1980, *Federal Register*.)

The following items resulted and were transmitted to the CITES Secretariat together with a justification for their inclusion in the provisional agenda:

1. Listings to Control Trade in other Species: Findings of nondetriment are required for export of all Appendix I and II specimens, whatever the purpose of the listing. However, if a species ("C") is listed in Appendix I or II solely in order to control trade in some other species ("P"), then trade in "C" could be controlled so that it is not detrimental to the survival of the species "P", or it could be controlled so that it is not detrimental to the survival of species "C". The Service believes that findings made by scientific authorities on trade in species "C" should take into consideration impacts of that trade on species "P".

2. Appendix I imports: CITES requires the issuance of an import permit for specimens of Appendix I species. As a condition for such permit issuance, the scientific authority must advise the management authority that the import will be for purposes which are not detrimental to the survival of the species. As with the findings of nondetriment concerning "control species," the Service believes that practices of scientific authorities concerning imports of Appendix I species vary from Party to Party. The Service feels that these scientific authorities should consider the impact of proposed imports on the species involved rather than the question of whether particular purposes, as such, are not detrimental.

These topics appear under XVI in the provisional agenda, Interpretation and Implementation of the Convention (F.R. 8/12/80).

Australian Proposals

The Australian Management Authority, the Australian National Parks and Wildlife Service (ANPWS), submitted three proposals for addition to the agenda. The items are: (1) Regulations of Trade in Appendix II Wildlife; (2) Reverse Listing of Species in CITES Appendices; and (3) Interpretation of the Convention with Regard to the Exploitation of Wild Species. These proposals appear in full in the November 10, 1980, *Federal Register*, and are included under XIV, and XV in the provisional agenda.

Canadian Proposals

Items suggested by Canada include (1) a ten year review of the appendices and (2) criteria for addition to and deletion from the appendices of species listed under Article II 2 (b) of CITES. These topics are included in the provisional agenda under XV and are discussed in the November 13, 1980, *Federal Register*.

Development of Agenda

Because it is not possible to detail in this article all events contributing to the development of the provisional agenda and U.S. negotiating positions, we refer you to the following list of six *Federal Register* entries. The Service published each of these notices after receiving them from the CITES Secretariat or pursuant to a public notice or meeting:

- Notice—F.R. 5/9/80—publication of time, place, and provisional agenda for third regular CITES meeting.
- Notice—F.R. 8/11/80—acceptance of suggestions for addition of several items to provisional agenda.
- Notice—F.R. 9/3/80—proposed negotiating positions with regard to certain provisional agenda.
- Notice—F.R. 11/10/80—modification of Service's acceptance of three suggestions for addition of items to the provisional agenda.
- Notice—F.R. 11/13/80—publication of items added to the provisional agenda; change of meeting time; cut off date for receipt of requests for observer status; and report on formation of U.S. delegation to the meeting.
- Notice—F.R. 12/8/80—proposed negotiating positions for third regular meeting.

Discussion of XVI, Consideration of Proposals for Amendment of Appendices I and II, is contained in another article in this issue of the BULLETIN.

MANATEE FOUND IN CHESAPEAKE BAY VIRGINIA

William Gill

On October 22, 1980, the remains of a male West Indian manatee (*Trichechus manatus*) weighing nearly 740 pounds (335 kg) and measuring over 9½ feet (295 cm) was found by Sue Black, a local resident, in Buckroe Beach, Virginia. Buckroe Beach lies on the Chesapeake Bay just north of the mouth of the James River. The apparent cause of death was starvation compounded by pneumonia.

This occurrence marks the northernmost documented range for manatees in Service files. The previous authenticated record was from Ocean View,

Virginia, in 1908. Ocean View is just south of the mouth of the James River in Norfolk. [The Journal of Mammology (February, 1950; Vol. 1; pg. 98) reported an account of what appears to be a manatee sighted in the Rappahanock River, Virginia, by Thomas Glover on June 20, 1676. The Rappahanock River lies just south of the Potomac River and north of the James River.]

Generally during the winter months the U.S. population of the West Indian manatee is restricted to peninsular Florida, congregating around natural and industrial warm-water discharge sources. (Winter distribution has apparently expanded because of warm-water discharges from industrial and power-generating plants.) Summer distribution is more widespread, occurring along the Gulf and Atlantic coasts from western Florida to Georgia. Occasionally, sightings are reported from southern Texas to North Carolina. The principle distribution of the U.S. manatee population, however, is in Florida. It occurs in the St. Johns River from Brevard County to Jacksonville; along the Atlantic coast from Merritt Island to Key West; along the Gulf coast from Key West to Tampa Bay; horizontally across the State, along the Caloosahatchee River; Lake Okeechobee and the St. Lucie Canal; and in Bernardo and Citrus Counties from Chassahowitzka National Wildlife Refuge to Crystal River (also on the Gulf Coast).

The Denver Wildlife Research Center's Laboratory at Gainesville, Florida, serves as the Service's focal point for rescue and salvage operations. The rescue and salvage effort is conducted in cooperation with and the assistance of the Florida Department of Natural Resources, the University of Miami, the Miami Seaquarium and Sea World in Orlando. A toll free telephone number is in operation to report injured and/or dead manatees (800/342-1821). (See the September 1980 BULLETIN.)

PUBLIC PARTICIPATION RULES FINALIZED

Even though procedures for public participation and agency consultation in the development of U.S. negotiating positions at CITES regular meetings were not finalized until recently (F.R. 12/18/80), a series of Federal Register notices and public meetings conducted by the Service during the past nine months have, by following the regulations in proposed form, essentially implemented the regulations as now set. With the exception of publishing in the Federal Register a proposed schedule of

public meetings and notices related to the preparation of negotiating positions for the CITES meeting, all new regulatory requirements have been or will be, met with regard to the 1981 regular meeting in New Delhi. The Service believes that such a schedule will assist all concerned with the preparation of U.S. positions for future CITES meetings.

In response to the proposed public participation rules (F.R. 5/20/80), the Defenders of Wildlife requested that opportunity be given the public to comment on modified or additional agenda items submitted by the U.S. or by foreign parties subsequent to the initial agenda published in the Federal Register. This opportunity is provided in the new rules; a public meeting follows the publication of an initial agenda, and a second public meeting will follow a public notice on proposed negotiating positions of the

Service. Defenders also suggested the publication of a proposed schedule of public meetings and notices mentioned above.

As of January 26, 1981, six public meetings were held in preparation for the upcoming CITES meeting. Each meeting followed a notice published in the Federal Register which requested comments on various aspects of the provisional agenda. A seventh public meeting will be conducted following the return in mid-March of the U.S. delegation from the New Delhi meeting.

It should be noted that the Service's participation in projects, studies and committee work commissioned by the Conference of Parties is not subject to these new regulations. However, if such work is related to agenda items of future CITES meetings, it will be subject to public comment as part of the development of negotiating positions.

PUBLIC MEETINGS — HEARINGS

Species/Action	Affected States	Location of Meeting/Hearing	Date	Time
Kentucky cave shrimp: proposed C.H.	KY	Hearing: Horse Cave Theater, Main and Maple Streets, Horse Cave, Kentucky	2/25/81	7:00 p.m.
*Heliotrope milk-vetch (Astragalus montii): proposed, C.H.	UT	Meeting: County Courthouse, 160 North Main St, Manti, Utah	3/18/81	7:00 p.m.

* A summary of the proposed rulemaking on this plant will be included in the February 1981 BULLETIN.

CANCELLED

STATE MEETINGS

The Pennsylvania Biological Survey announces a "Conference on Species of Special Concern—Threatened and Endangered Species of Pennsylvania." It will be held at the Carnegie Museum of Natural History, Carnegie Institute, 4400 Forbes Avenue, Pittsburgh, Pennsylvania (15213) on March 7, 1981, from 10:00 a.m.-4:00 p.m. For additional in-

formation, write the above address or call 412/622-3283. Registration fee is \$12.00

The Center of Environmental Research at Stockton State College, Pomona, New Jersey (08240) will sponsor the "Second Symposium on Endangered and Threatened Plants and Animals of New Jersey" on February 28 and March 1, 1981. The symposium will be on Stockton State campus, Rooms B-115 and 116. Saturday hours are from 8:30 a.m.-5:00 p.m.; Sunday hours are from 1:00-5:00 p.m. For additional information call Dr. Wm. J. Cromartie (609/652-1776).

SERVICE COMMENTS ON PROPOSALS TO AMEND APPENDICES

Any party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) may propose changes to the lists of animal and plant species included in Appendices I and II for protection by this treaty. The Office of the Scientific Authority, staff to the Service as the U.S. Scientific Authority for CITES, announced in a notice (F.R. 11/6/80) a list of proposals for consideration at the upcoming CITES meeting in New Delhi.

The list contains proposals submitted by both U.S. and foreign governments (Australia, Austria, Federal Republic of Germany, France, Panama, Peru, South Africa, and the United Kingdom). Many proposals suggested earlier (F.R. 7/21/80) were not submitted for consideration at New Delhi, either because the available information was insufficient to meet the parties' criteria for including or delisting species, or because the information indicated that a proposal was not appropriate under the terms of the CITES.

We regret that space limitations preclude our publication of the entire list of proposals, although we will attempt to carry final amendments in the April 1981 BULLETIN. In lieu of the complete list, we have printed below selected portions of comments on them sent by the Service to the CITES Secretariat.

Sea Turtles/Iguanas

The U.S. strongly favors Australia's proposal to transfer the flatback sea turtle (*Chelonia depressa*) and the Australian population of the green sea turtle (*Chelonia mydas*) from Appendix II to Appendix I. While the population status of these animals does not qualify them for inclusion in Appendix I on biological grounds, it is evident that effective control of trade in other sea turtles requires such listing. *Chelonia mydas* populations are protected as Endangered and as Threatened under the Endangered Species Act of 1973 (see August 1978 BULLETIN).

Both Australia and the U.S. proposed listing of the Fiji banded iguana (*Brachylophus fasciatus*) and the Fiji crested iguana (*Brachylophus* sp.) on the Appendices (Appendix I by the U.S. and Appendix II by Australia). The Service believes that the Fiji banded iguana, despite its wider distribution, is threatened with extinction. Both iguanas are listed as Endangered under the Act (see April 1980 BULLETIN).

Whales

The U.S. proposed to transfer the sperm whale (*Physeter macrocephalus*), Sei whale (*Balaenoptera borealis*), and Fin whale (*Balaenoptera physalus*) from Appendices I and II to Appendix I, with exceptions for certain stocks. The U.S. suggests that its proposal to include in Appendix I certain stocks of each of these three species be modified as follows. Instead of specifying certain stocks, the listing of each species in Appendix I could be followed by the statement "all stocks for which the International Whaling Commission allows no commercial catch, as specified in the 1980 schedule."

The Federal Republic of Germany proposed to transfer all stocks of the same three whale species to Appendix I. While the U.S. continues to seek a moratorium on commercial whaling, which would be supported by the German proposal, the U.S. withheld comment pending resolution of issues concerning the relationship of CITES to the Convention for the Regulation of Whaling and concerning satisfaction of the Appendix I listing criteria for these species. (All three whale species are protected as Endangered under the Act.)

Psittacines (Parrots and Allies)

Both the United Kingdom and the U.S. proposed listing all species of the order Psittaciformes in Appendix II, except for those species included in Appendix I. There is evidence of extensive international trade involving many species in this order. The results of a recent study by TRAFFIC (USA) on U.S. imports of psittacines show that during nine months, from October 1979 to June 1980, the U.S. imported over 200,000 psittacines originating from 50 countries. They included 133 species (73 Old World and 60 New World), almost 40 percent of all psittacine species, representing 44 of the 81 genera.

The U.S. agreed with the United Kingdom that the budgerigar (*Melopsittacus undulatus*) should be excluded from the appendices. For the same reasons, the Service also now believes that the cockatiel (*Nymphicus hollandicus*) should be excluded from the appendices.

With respect to the U.K. proposal to include all species of the order Psittaciformes in Appendix II, the Service com-

mented that it is important to distinguish between species listed because of current or potential threat of extinction, and those listed in order to effectively control trade in other currently or potentially threatened species. Many species of psittacines are in international trade, but evidence of threat exists only for certain species. The listing of the order as a whole can only be justified under Article II.2 (b) of the CITES, while those individual species for which there is sufficient evidence of current or potential threat can be justified under Article II.1 or II.2 (a), respectively.

Southern White Rhinoceros

The Service commended the Republic of South Africa for their notable success in restoring populations of the southern white rhinoceros (*Ceratotherium simum simum*), and recognized the problems of managing this species in a limited habitat.

However, the Service noted that transfer of this subspecies to Appendix II should not occur because it would allow commercial trade in rhinoceros products, which is otherwise prohibited for all species of rhinoceros. Even if the subspecies in question does not enter such trade, products of other species might enter trade under the name of this subspecies. This would have serious consequences for the other species, which are in peril of extinction because of trade.

Other Comments

U.S. proposals to list on Appendix I both the Marianas fruit bat (*Pteropus mariannus*) and the little Marianas fruit bat (*Pteropus tokudae*) are in line with a petition made by the Government of Guam for the Service to review the status of 12 species from that island. A notice of review to determine whether they should be listed as Endangered or Threatened, and their Critical Habitats designated, was published over a year ago (F.R. 5/18/79). The Marianas fruit bat, highly prized as food, is reportedly imported to Guam from other islands (Saipan, Tinian, and Rota). This, along with other debilitating factors, contributes to its declining populations.

All populations of the American crocodile (*Crocodylus acutus*) have been proposed by the U.S. and Panama to be transferred from Appendix II (except I for Florida) to Appendix I. This species is protected as Endangered under the Act.

The U.S. has proposed that the Central American river turtle (*Dermatemys mawii*) be listed on Appendix I and that the West Indian rock or ground iguanas (*Cyclura* spp.) and Gray's monitor lizard (*Varanus grayi*) be transferred from Appendix II to Appendix I. All three of the above reptiles are included in a notice of review on the status of 18 species of

foreign reptiles (F.R. 8/15/80). The San Esteban Island chuckwalla (*Sauromalus varius*), proposed by the U.S. to be placed on Appendix I, is listed as Endangered under the Act (See the April 1980, BULLETIN).

Four native plants listed in the Serv-

ice's recent plant notice (see page 1) are proposed for addition to the appendices: California pitcher plant or cobra lily (*Darlingtonia californica*) and Venus flytrap (*Dionaea muscipula*) to Appendix II; Alabama canebrake pitcher plant (*Sarracenia alabamensis* ssp *alaba-*

mensis) and red pitcher plant (*Sarracenia jonesii*) to Appendix I. The U.S. also proposed the green pitcher plant (*Sarracenia oreophila*), which is protected as Endangered under the Act (see October 1979 BULLETIN), for addition to Appendix I.



NOAA/NMFS Photo

With the exception of certain stocks, the U.S. has proposed to transfer the fin whale from Appendices I and II to Appendix I of CITES.



Photo by Colin Limpus

The Commonwealth of Australia has proposed to place the flatback sea turtle (*Chelonia depressa*) on Appendix I of CITES. This action, which was also recommended by the World Conference on Sea Turtle Conservation, would assist in the control of trade in other sea turtles.

SERVICE ISSUES 1980-81

EXPORT FINDINGS

The Service has issued final findings for the export of bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), Alaskan gray wolf (*Canis lupus*), and Alaskan brown bear (*Ursus arctos*) for the 1980-81 season (F.R. 12/4/80). As with earlier findings issued for export of American ginseng (*Panax quinquefolius*) and American alligator (*Alligator mississippiensis*)—F.R. 10/21/80), States must meet criteria used by the Service acting as both U.S. Scientific Authority and Management Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in order to qualify for export of these species. All of these species are listed on Appendix II of CITES.

Scientific Authority criteria requires a State to provide information on population trend, total harvest of the species, distribution of the harvest, and habitat evaluation. The States must also demonstrate a controlled harvest, that pelts are registered and marked, and that a harvest level objective has been determined. States that do not meet all of these criteria may be able to satisfy Scientific Authority concerns by providing reasonable assurance that export will not be detrimental to the survival of the species through their efforts to improve information on populations and harvests.

Management Authority criteria for export requires an ongoing State tagging program to assure that specimens were legally taken. Tags must (1) be made of metal or some other permanent material, (2) be permanently attached to the pelt, (3) accompany finished products to the port where they will be collected by U.S. Fish and Wildlife officers, (4) be applied within a specified time of taking, (5) show State of origin, (6) show year of taking, (7) show species, and (8) be serially unique.

The Service has concluded that both Scientific Authority and Management Authority criteria have been met for the export of bobcat, lynx, and river otter taken in the 1980-81 season for these States:

1. Bobcat—Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, Navajo Nation.

2. River otter—Alabama, Alaska, Arkansas, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, New Hampshire,

New York, North Carolina, Oregon, South Carolina, Vermont, Virginia, Washington, Wisconsin.

3. Lynx—Alaska, Minnesota, Montana.

Both Scientific and Management Authority criteria have been met for the export of Alaskan gray wolf and Alaskan brown bear taken in the 1980-81 season with the condition that pelts are tagged as required by the State of Alaska.

IMPORT/EXPORT LICENSE REQUIREMENT RELAXED

To relieve the burdensome demands that the import/export license requirement would impose on small entities, particularly small businesses and individuals who only occasionally import or export wildlife for gain or profit, the Service has amended the rule to except persons if the value of the wildlife they import or export totals less than \$25,000 a calendar year (F.R. 12/31/80). Persons who may qualify for the exception, and have submitted an application to the Service for an import/export license, should contact as soon as possible the Special Agent in Charge to whom the application was sent. (See September 1980 BULLETIN for an explanation of the import/export license requirement.)

SERVICE ALLOWS NATIONWIDE SALE OF ALLIGATOR MEAT

The Service has revised the special rule on the American alligator (*Alligator mississippiensis*) allowing the nationwide sale of meat and other parts, except hides, from lawfully taken specimens (F.R. 11/25/80). Under the revised rule, fabricators who manufacture products from American alligator leather

are no longer required to obtain a permit. After reviewing public comments on the proposed rule (F.R. 8/8/80—see the August 1980 BULLETIN), the Service decided that no substantive changes to the proposed rule were necessary.

Although fabricators are no longer required to obtain a permit, buyers and tanners engaging in trade in American alligators remain highly regulated. This is to insure that only lawfully taken specimens enter the market. Basically, American alligator meat and other parts, except hides, may be sold nationwide if the sale is in accordance with the laws and regulations of the State in which the taking occurs and the State in which the sale occurs.

A number of conditions must be satisfied in order for harvested alligators to reach the market place: (1) the untanned hide may be sold or transferred only to a person holding a valid Federal permit to buy hides, (2) the hide must be tagged by the State where the taking occurs with a noncorrodible, serially numbered tag which identifies the State, (3) the tag number, length of skin, type of skin, and date and place of taking must be recorded with the State, and (4) packages or containers for shipping American alligator must have an identifying tag or label on the outside.

Any person wishing to engage in the activities of a buyer or tanner must first apply for a Federal permit from the Fish and Wildlife Service. The Service will issue a permit based on, among other things, the applicant's reliability and apparent ability and willingness to keep an accurate inventory and records of all American alligator hides, and all hides of any other species of the order Crocodylia handled by the applicant.

Because fabricators are no longer required to obtain a permit or attach labels to manufactured products, the Service is offering to refund, at the original cost of 30¢ each, for a period ending 90 days from December 22, 1980, their unused labels (F.R. 12/22/80). To receive the refund, return unused labels, arranged in numerical sequence and accompanied by an inventory of labels being returned, to the Federal Wildlife Permit Office, P.O. Box 3654, Arlington, Virginia 22201.

December 1980

ENDANGERED STATUS: CRITICAL HABITAT PROPOSED FOR CHIHUAHUA CHUB

The Service has proposed the Chihuahua chub (*Gila nigrescens*) as an Endangered species with Critical Habitat (F.R. 12/15/80). Populations of the chub have been significantly reduced because of recent modifications in the aquatic habitats of the Guzman Basin, including the Mimbres River of New Mexico and the Rio Casas Grandes, Rio Santa Maria, and Laguna Bustillos drainages of Mexico.

Adult chubs average about six inches in length and are usually found in pools (greater than three feet in depth) or associated with some type of cover (such as undercut banks, submerged trees or shrubs) in small and medium size streams. The chub's preferred habitat, however, has been virtually eliminated through a combination of factors associated with agricultural and flood control developments.

The effects of flood reclamation work, maintenance of push-up irrigation diversions, channelization, and development of flood control levees on the habitat have restricted the present chub population, probably fewer than ten adult chubs, to one small section of the Mimbres River. Continuation of these activities will severely threaten the continued existence of the species in the United States.

However, with appropriate modifications, some of the activities described above could be carried out without adversely impacting the chub population. Channelization in any form within the Critical Habitat would likely be detrimental to the chubs, but incentive to modify stream channels would probably not exist if adequate flood protection was available for local property owners. In addition, any future excessive ground water pumping or surface water diversion in the vicinity of the Critical Habitat could be detrimental to the chub.

No known current or proposed Federal action should impact the proposed Critical Habitat. However, the U.S. Army Corps of Engineers, the Soil Conservation Service, and the Federal Disaster Assistance Administration are authorized to provide Emergency Levee Rehabilitation (Public Law 84-99) for private flood control structures damaged by high waters. Consequent-

ly, a future flood on the Mimbres River may necessitate such Federal flood control improvement projects in the proposed Critical Habitat area.

The Service has received support for listing the chub as Endangered from: the Albuquerque District of the U.S. Army Corps of Engineers, the American Fisheries Society Endangered Species Committee, the New Mexico Wildlife

Federation, and the Desert Fishes Council. A public meeting on this proposed rule was held in Silver City, New Mexico, on January 6, 1981. Additional comments from the public on this proposal must be received by March 16, 1981. They should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.



Probably fewer than ten adult Chihuahua chubs exist today in one small section of the Mimbres River in New Mexico.

New Mexico Department of Game and Fish Photo

Critical Habitat Proposed for Stickleback

Based on recommendations made by the Unarmored Threespine Stickleback Recovery Team, the Service has proposed to designate Critical Habitat for this subspecies (F.R. 11/17/80). The unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), federally listed as Endangered on October 13, 1970, is presently known only from the headwaters of the Santa Clara River in northwestern Los Angeles County, and one creek in Santa Barbara County, California.

According to the recovery team, stickleback populations have been eliminated in some river systems because of large-scale impoundments, stream channelization, increased water turbidity, introduction of non-native competitors and predators, and water pollution.

Quantity and quality of water are important factors in the survival of the subspecies. Survival of the unarmored threespine stickleback is dependent on a continuity of spring-fed water flow. However, evidence suggests that genetic integrity of the population also depends on an absence of surface flow in some segments of the lower watercourse during dry periods of the year. Therefore, there are maximum and minimum long term water levels beyond which the survival of this subspecies

could be adversely affected.

Streams where the fish still occurs are characterized by clear water with a slow to moderate current, shallow pools, minimal pollution, and a good diversity of algae and higher plants. The stickleback's survival could be adversely affected by activities which greatly modify water current, depth, or vegetation, or by the introduction of non-native species.

Considerable portions of the areas being proposed as Critical Habitat are under direct responsibility of the U.S. Forest Service and the U.S. Air Force. In the event that this proposal is published as a final rule, these agencies (as well as other Federal agencies) would be required to insure that activities they authorize, fund, or carry out are not likely to result in the destruction or adverse modification of these Critical Habitats.

The Critical Habitat designation includes three stream zones of the upper Santa Clara River watershed in northwestern Los Angeles County, California (including a zone near Del Valle, one in San Francisquito Canyon, and one in Soledad Canyon), and the lower segment of San Antonio Creek on the Vandenberg Air Force Military Reservation in Santa Barbara County, California.

Comments on this proposal are due by February 17, 1981, and should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

BACK ISSUES OF BULLETIN AVAILABLE

Back issues of the *Endangered Species Technical Bulletin* (July 1976-November/December 1980) are now available from the Fish and Wildlife Reference Service in Denver, Colorado. This service is an agency of the Denver Public Library and is funded by the U.S. Fish and Wildlife Service, Division of Federal Aid. Available "hard copy" issues will be sent free of charge upon request for as long as the supply lasts. A complete set of back issues is available on microfiche for \$2.00. New issues will be added to the set at regular intervals. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy to Fish and Wildlife Reference Service, Unit I, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

CORRECTION

In the November/December 1980 BULLETIN we incorrectly identified Ben Sanders, in a photo appearing on page 3, as a Fish and Wildlife Service botanist. He is a U.S. Forest Service wildlife biologist. Nora Murdock, also in the same picture, should have been identified as a Fish and Wildlife Service biologist. We regret the errors.

BOX SCORE OF SPECIES LISTINGS

Category	Endangered		Threatened		Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	241	3	21	279
Birds	66	159	3	0	214
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	34	15	12	0	57
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	6	1	13
Plants	51	2	8	3	60
TOTAL	234	489	50	29	750

Number of species currently proposed: 18 animals
10 plants

Number of Critical Habitats listed: 48

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 39

Number of Cooperative Agreements signed with States:
37 (fish & wildlife)
8 (plants)

December 31, 1980

NEW PUBLICATIONS

Proceedings of the 1979 Symposium of the Desert Tortoise Council are now available. To order, send \$5.00 to the Desert Tortoise Council, 5319 Cerritos Avenue, Long Beach, California 90805.

Copies of the *Proceedings of the Symposium on Endangered and Threatened Plants and Animals of Virginia* are available at \$12.00 per copy from Mrs. Yvonne Holmes, Sea Grant at Virginia Tech, P.O. Box 369, 102 South King

Street, Hampton, Virginia 23669.

A list of *Endangered and Threatened Wildlife and Plants Native to the United States* is available from the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240. The list is current as of October 1, 1980, and is free of charge.

The Forest Service has published a booklet entitled *Rare and Endemic Trees of Puerto Rico and the Virgin Islands*, Conservation Research Report No. 27. For further information on the cost and availability of this publication, contact the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Colorado Squawfish Stolen From Hatchery

Recovery efforts for the Endangered Colorado squawfish (*Ptychocheilus lucius*) received a severe setback in late November when 14 of the 27 adult specimens held at Willow Beach National Fish Hatchery in Arizona were stolen and possibly eaten, according to special agent Bob Wright of the U.S. Fish and Wildlife Service.

Of special concern in the incident is the fact that 12 females were taken, leaving only two adult females alive from this year's wild-captured stock. Although other squawfish remain in captivity, this incident has diminished the divergent gene pool necessary for development of a healthy population.

Three Las Vegas men have been indicted by a Federal grand jury on felony charges of theft of government property, interstate transportation of stolen property, and possession of an Endangered species. The three face a possible \$20,000 fine and/or a year in prison for each stolen fish (under the Endangered Species Act).

The Colorado squawfish or "white salmon," a member of the minnow family, Cyprinidae, is the largest minnow in North America, once attaining lengths of over 5 feet and weights of more than 50 pounds. Impoundments along the Colorado River, starting with Hoover Dam in 1935, have resulted in the decline of this species. A recovery plan for the squawfish, approved by the Service in 1978, called for an extensive propagation program and reintroduction of the fish in parts of its historic range. According to Colorado

Squawfish Recovery Team leader, Kent Miller, recovery will be delayed because of the near elimination of the brood stock.

Recently Discovered Plant Proposed for Protection

A single population of the Heliotrope milk-vetch (*Astragalus montii*) is known to exist in the alpine Big Flat meadow area of Heliotrope Mountain, Sanpete County, Utah. The Service has proposed Endangered status with Critical Habitat for this plant (F.R. 1/13/81).

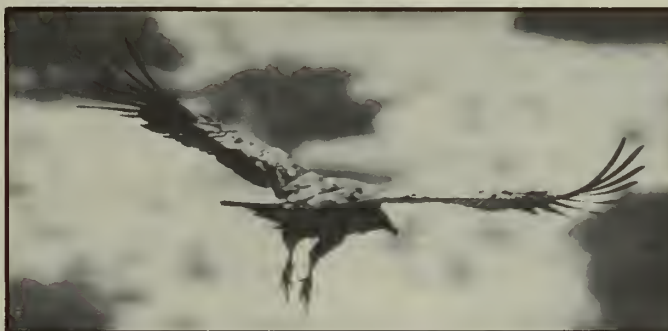
This small perennial belonging to the pea family (Fabaceae) was discovered in 1976 and was first described and recommended for Endangered status in 1978

by Dr. Stanley L. Welsh of Brigham Young University. In January 1980 the Utah Native Plant Society placed the milk-vetch as one of 14 plants on its highest priority for listing; the Service assigned it a category 1 rating in its recent native plant status notice (see January 1980 BULLETIN). The U.S. Forest Service, which manages its approximately 80-acre habitat in the Manti-LaSal National Forest, includes the plant on its official "sensitive plants" list.

Since the area proposed as Critical Habitat is relatively remote, few activities are likely to adversely modify it. Forest Service management plans for grazing and recreation in the area, however, may require modification. (This Federal agency and other interested parties or organizations are requested to submit information on economic or other impacts of the proposed action.)

The Heliotrope milk-vetch is characteristically slow growing and intolerant of habitat disturbance. Limited use of its habitat by sheep, which trample but do not eat the plant, threatens its continued existence. Motorcycle tracks observed at the summit of the proposed Critical

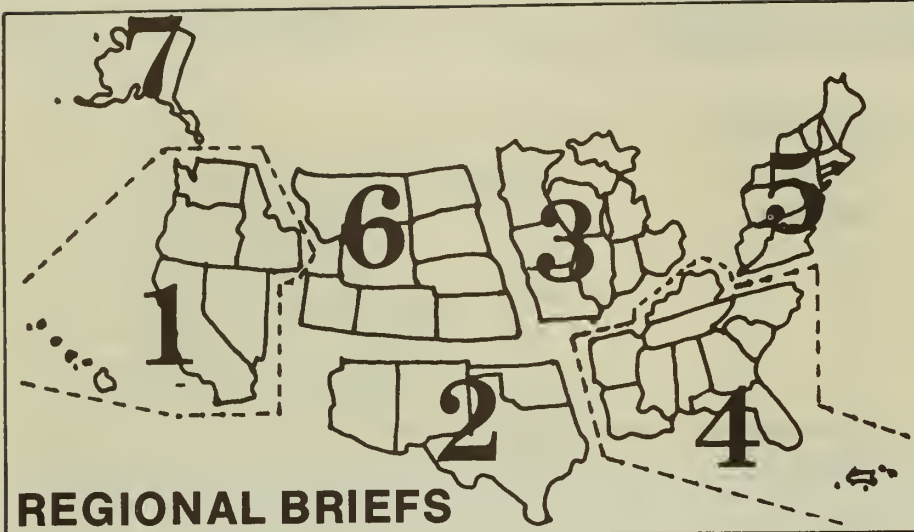
Continued on page 3



*Patagial
marked
Andean
condor in
flight over
Sechura
Peninsula.*

U.S. Fish & Wildlife
Service Photo by
Franz Camenzind

**See Story
Page 3**



Endangered Species Program regional staffers have reported the following activities for the month of January.

Region 1. Title was conveyed to the Service for 700 acres in Tulare County, California, which is a portion of the

Horse Pasture-Pixley blunt-nosed leopard lizard habitat unit. This area is one of several identified in the species' recovery plan as suffering loss of suitable habitat.

The Service has acquired 505 acres

within the Tijuana Estuary from the Helix Corporation. This is the last major undeveloped estuary in southern California and is used by four Endangered species: light-footed clapper rail (*Rallus longirostris levipes*), California least tern (*Sterna albigrons browni*), Salt marsh bird's beak (*Cordylanthus maritimus* ssp. *maritimus*), and brown pelican (*Pelecanus occidentalis*).

Recovery plans for the Devil's Hole pupfish (*Cyprinodon diabolis*), blunt-nosed leopard lizard (*Crotaphytus silus*), and Pahump killifish (*Empetrichthys latos*) have been printed and are available from the Fish and Wildlife Reference Service, 3840 York Street, Unit 1, Denver, Colorado 80205.

Region 2. The transfer of 137 razor-back suckers (*Xyrauchen texanus*) from Lake Mohave to Dexter National Fish Hatchery was successfully completed. Reproduction actually began the first day the fish arrived at Dexter and, despite the loss of a few individuals from the breeding stock, a good year-class has been started.

Region 3. The Service is involved in an informal consultation with the Army Corps of Engineers over possible emergency dredging of the east channel of the Mississippi River at Prairie du Chien, Wisconsin. This area is known to harbor the Endangered Higgin's eye pearly mussel (*Lampsilis higginsii*).

Region 4. An agreement signed between the Service and the City of Aniston, Alabama, has eliminated any immediate need to list the pygmy sculpin (*Cottus pygmaeus*) as an Endangered species. The pygmy sculpin, known only from a spring used as part of the city's water supply, was proposed for Endangered status on November 29, 1977, but the proposal expired two years later without completion of a final rule. Subsequent investigations by the Service led to the conclusion that the species does not face serious threats at this time, and in light of the cooperative attitude expressed by the city, the terms of the agreement should provide adequate protection for the species.

Completion of the 1980 Everglade kite (*Rohstrhamus sociabilis plumbeus*) census reveals 651 birds, perhaps the largest number in Florida in over 50 years. The lowest levels reported were back in the 1950's and '60's when in some years the numbers were estimated at 50-70.

Region 5. On January 8, 1981, the administrative law judge reviewing the Pittston Company's Environmental Protection Agency permit case reversed EPA's decision to deny a Cleanwater Act permit, and directed that the permit be issued. Pittston plans to build a marine terminal and oil refinery at Eastport, Maine. The Interior Department has until February 27 to appeal to the Administrator of EPA. For more information

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. Region 2: Arizona, New Mexico, Oklahoma, and Texas. Region 3: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Region 4: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. Region 5: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Region 6: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Region 7: Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

on this case, see the March 1979 BULLETIN.

A male peregrine falcon which was successfully paired with Scarlett atop Baltimore's tallest building, was found dead in early November, according to Dr. Tom Cade of Cornell University's Peregrine Fund. Rhett, as the bird was named, was found in the vicinity of some grain elevators in the Baltimore area. Cade said that a report from the Fish and Wildlife Service's Patuxent Wildlife Research Center indicated traces of strychnine in the bird. According to Cade, the bird apparently picked up the poison from a contaminated pigeon.

Rhett was brought to Baltimore this past spring, and together he and Scarlett raised chicks which were introduced by Cornell. Scarlett is still in Baltimore, and a female peregrine from a New Jersey release as well as an immature falcon have also been seen in the area.

Region 6. The U.S. Forest Service, National Park Service, Montana Department of Fish, Wildlife, and Parks, Wyoming Game and Fish Department, Idaho Fish and Game Department, and the Fish and Wildlife Service have finalized *Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area*. The guidelines will be used as a primary source for management decisions involving grizzly bears (*Ursus arctos horribilis*) and their habitat in the Greater Yellowstone Area. This area encompasses five national forests and two national parks.

Milk-Vetch Proposed

Continued from page 1

Habitat signal another possible threat to the species.

Benefits derived from grazing in the milk-vetch habitat are very low, totalling less than 400 sheep days per year. Frequency of use and degree of damage by recreational vehicles, however, have not been evaluated.

The Fish and Wildlife Service invites additional data and comments from the public regarding this proposed rule. All submissions should be made, preferably in triplicate, to the Regional Director (SE), U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225, by April 13, 1981. Comments received will be considered along with those made at the public meeting, to be held in Manti, Utah, on March 18, 1981.

FOREIGN STUDIES YIELD DATA FOR CONDOR RECOVERY

Last Fall a team of biologists from the Condor Research Center, Ventura, California, embarked on two foreign trips to study the Endangered Andean condor (*Vultur gryphus*) and various African vultures. Information and experience gained during the six weeks of study will be used in planning and executing future recovery efforts on behalf of the Endangered California condor (*Gymnogyps californianus*).

STUDY GROUP-SOUTH AFRICA

In mid-September 1980, the timing recommended by African vulture experts, the team visited study sites of the Vulture Study Group (VSG) in South Africa. This group, chaired by John

of handling the birds.

All members of the VSG consider collection of data from nestling vultures to be an essential part of their studies, and a procedure which involves little risk to the bird. To date, no vultures have been lost during handling procedures by members of the VSG.

An expedition in a National Park in Zimbabwe helped clarify for the team the workings and possible risks of the cannon-netting capture techniques. Evidence from this experience, and the VSG's cumulative experience of several years trapping, indicate that injury or death due to the net or attached parts is extremely unlikely. Although, early in their trapping program, VSG lost 14 vultures (out of 700 netted)—two were



One of the released Patuxent Andean condors suspiciously eyeing the clap-trap set up.

Photo by
Noel F. R. Snyder

Ledger, has conducted a variety of research projects for a number of years, and have netted and handled well over 1,000 adult and nestling vultures, far more than any other team presently studying vultures. Current studies of the VSG are directed primarily towards two species, the Lappet-faced vulture (*Torgos tracheliotus*), a bird nearly as large as the California condor; and the colonial, cliff-nesting, Cape vulture (*Gyps coprotheres*), which has a 7 to 8 foot wing-span, somewhat smaller than the California condor's wing-span of 9 feet.

While in Southern Africa, team members handled nestlings of both the Lappet-faced and Cape vultures, and adults of three species—Lappet-faced, hooded (*Necrosyrtes monachus*), and white-backed (*Gyps africanus*). This experience afforded the team members the opportunity to observe for themselves handling techniques and various response characteristics of the different species of birds. They found that most adult vultures (with the exception of white-backed vultures) presented no handling difficulties. Some nestlings, however, did offer resistance; Lappet-faced vultures are nearly inert up until they are almost ready to fledge, at which time they begin to offer some resistance; nestling Cape vultures struggle in an attempt to stay in their nests. These conclusions were consistent with the experiences of the VSG over several years

struck by missiles which carry the net over the birds, and 12 died of heat stress when large numbers of vultures were trapped at once and not removed immediately from under the net. Corrections made in positioning bait and the angle of the net, have eliminated these problems. African vulture workers have found other trapping methods to be less desirable.

A study recently initiated with the VSG staff involves a calcium problem in Cape vultures which manifests itself in severe feather deformities and twisted bones. This condition reflects a recent socio-ecological phenomenon in which food types available to foraging vultures have changed. Apparently, the diet of Cape vulture chicks must include bone fragments brought in from the carcasses by the adults. In South Africa today, where most carcasses are domestic livestock and where the bone-crushing hyenas have been eradicated, bone fragments are not available, seriously affecting the chicks. This problem has clear implications for similar studies of the California condor.

PERUVIAN WEEKS

In early October the team joined forces with the Stanley Temple group in the Sechura Peninsula of northwestern Peru. Prior to the team's arrival, the Temple group had successfully released

Continued on page 4

PUBLIC COMMENT ON DRAFT PETITION GUIDELINES INVITED

Any individual or group may file a petition requesting that a species either be added to or removed from the official list of species protected under the Endangered Species Act of 1973, as amended. Draft guidelines for receiving and responding to such petitions were recently published by the Service (F.R. 1/13/81) as required by the 1979 Amendments to the Act.

An additional requirement of the amendments is that criteria for making findings on petitions also be published. Such criteria were published in 50 CFR 424.14(b) in the February 27, 1980, *Federal Register*. Comments on the guidelines must be received by March 16, 1981, and should be sent to the Director (FWS/OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. Serious consideration will be given to all comments and information received; final guidelines may, therefore, differ from those proposed.

Condor Recovery

Continued from page 3

5 captive-bred Andean condors, flown in from the Service's Patuxent Wildlife Research Center in Laurel, Maryland. These birds, all wearing patagial tags and patagial-mounted radio transmitters, were moving freely around the eastern edge of the Illescas Mountains and were associating in apparently normal fashion with wild Andean condors. The remarkable transition of these birds to wild existence was regarded by the team as a very encouraging development with respect to the future of a captive-breeding and release program for the California condor.

During their month stay, the team was able to evaluate the efficacy and risks involved with the following major procedures on wild Andean condors: (1) capture techniques—rocket-net, clap-trap, and walk-in trap; (2) patagial-mounted radio transmitters; (3) laparoscopy; (4) blood, feather, fecal, and tracheal sampling; and (5) various handling methods.

The team's radio-telemetry activities went extremely well. They received signals from all 11 Andean condors (including 5 released captives) currently carrying transmitters in the wild. Reception was achieved both from their mobile

ground stations and from a tracking plane.

Prior to the team's tracking flights, it had been thought that the Illescas Mountain condors represented an isolated population. Aerial monitoring, however, revealed that condors were crossing the 75-mile-wide Sechura Desert between the Illescas and the Andean foothills. It appears that condor movement across the desert and back again may be regular and frequent.

In recent weeks, Temple researchers have found two condors, wearing patagial markers, at two different nesting sites, each with an unmarked companion. These nests will be watched to see whether normal nesting behavior ensues.

The radioed birds have led the Temple researchers to previously unknown feeding sites, an undiscovered nest site, and areas where predator poisoning was taking place. Apart from radio-telemetry, there is no other way to gather such information.

Data gathered through these studies are vital to California condor recovery efforts since the Andean condor is the closest surrogate species available for such testing. Once radio-telemetry can be used as part of field studies in California, it will be possible to get badly needed habitat utilization information. (For more information on the Patuxent Wildlife Research Center's captive breeding program with Andean condors, see the August 1980 BULLETIN.)



Released-captive and wild female Andean condors inspecting rocket net scene from the side. (inset above) Closeup view of a radio transmitter attached to the patagium of an Andean condor.

Photo by Noel F. R. Snyder

Photo by Noel F. R. Snyder

Rulemaking Actions

January 1981

ENDANGERED PLANT OF MOKOLI'I ISLAND PROPOSED

Carter's panicgrass (*Panicum carteri* Hosaka), an annual grass found only on Mokoli'i Island, Hawaii, was recently proposed for Endangered status. The entire island, which totals approximately 4 acres, was also proposed as Critical Habitat.

This species fluctuates considerably in numbers from year to year, apparently in response to the amount of winter rainfall. The largest number of individuals ever observed was slightly over 200 and in some years observers have failed to find the species at all. Until recently, the species was thought to be extinct.

Although the plant is now known only to occur in two restricted areas of the small island, activities anywhere on the island could be significant to the conservation of the species. As an example, a fire set virtually anywhere on the island during drought conditions might spread to the area in which the *Panicum* grows. Therefore, the Service believes the entire island to be an area essential to the plant's survival. Threats to the species' survival other than vandalism, such as fires, are trampling by visitors to Mokoli'i Island, and possible environmental alterations resulting from the recent planting of coconut trees in the area in which it grows.

Habitat Accessible

Even though the habitat is part of Kualoa Regional Park, and the master plan of that park designates the island as a wildlife sanctuary, it will be difficult to control access to the island. The island can be reached by wading during low tide and by small boats at other times. Additionally, it is inevitable that traffic on Mokoli'i will become heavier as development plans are implemented and more people are attracted to the park. Although the effect of pedestrian traffic on the species is not known, some effect on the plant can be anticipated since its entire population ranges along a foot trail. A report received by the

Service indicates that recent planting of coconut trees on Mokoli'i may already have had an impact on the area from which the panicgrass is known.

The Service believes this proposal to be without significant economic or other impacts in the foreseeable future. However, Federal listing of the species should reinforce the local government's compatible designation of the area as a wildlife sanctuary.

A public meeting concerning this proposed rule will be held at Kahalu'u Elementary School Cafeteria, 47-280 Waihe's Road, Kaneohe, Hawaii, on Thursday, March 5, 1981, at 7:30 p.m. Written comments from the public on this proposal must be received by April 30, 1981, and should be sent to the Director (FWS/OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Texas Poppy-Mallow Added to Endangered Species List

Described by the Garden Club of America as one of the most beautiful wild flowers in Texas, the Texas poppy-mallow (*Callirhoe scabriuscula*) has been listed by the Service as an Endangered species (F.R. 1/13/81).

Occurring in a small area of deep sandy soil blown from alluvial deposits along the Colorado River, the Texas poppy-mallow and its habitat are being threatened by taking, sand mining, and trampling. The plant's range is limited to a small area in Texas. The species is imminently threatened by commercial sand mining in the plant's habitat.

According to observers, numbers of individuals in areas under grazing pressure have been declining, and there is a marked reduction in plant vigor. The erect habit and single main stem of the plant make it especially vulnerable to trampling by grazing animals.

The listing of *Callirhoe scabriuscula* would not create a conflict with the State's wildlife resources, nor would the

proposed Stacey Reservoir have a negative impact on the plant or its habitat, according to the Governor of Texas and the Service.

Because of the existing threat of taking, which is not prohibited under the Endangered Species Act with respect to plants, Critical Habitat has not been determined for the Texas poppy-mallow. It is believed that publication of Critical Habitat maps, detailing the plant's location, would tend to make the species more vulnerable.

EFFECTIVE DATES DELAYED

In compliance with a recent Presidential directive, the effective dates of final rulemakings published prior to January 30, 1981, but not yet in effect, have been extended for a 60-day period. The effective dates of all final rulemakings featured in this issue of the BULLETIN are therefore extended until March 30, 1981. (See the February 4, 1981, *Federal Register* for additional information.)

GENUS OF HAWAIIAN TREE SNAILS LISTED AS ENDANGERED

Michael Bender

All species of the genus *Achatinella*, a group of colorful and extremely rare Hawaiian tree snails, have been listed recently by the Fish and Wildlife Service as Endangered (F.R. 1/13/81). The protective action was taken because habitat destruction, excessive collection, and predation by introduced animals has led to a precipitous decline in these species, a number of which are thought to be already extinct. Critical Habitat was not designated in this case because it would have pinpointed the location of the snails and made them more vulnerable to collection.

Continued on page 7

TWO NEW MEXICAN PLANTS LISTED WITH CRITICAL HABITAT

Gypsum wild buckwheat (*Eriogonum gypsophilum*) and Todsens pennyroyal (*Hedeoma todsenii*) were listed by the Service as Threatened and Endangered species, respectively (F.R. 1/19/81). Critical Habitat was also determined for both species.

The range of gypsum wild buckwheat is limited to approximately 130 acres in the Seven River Hills of Eddy County, New Mexico, at elevations from 3,290 to 3,450 feet. The area designated as its Critical Habitat is public land administered by the Bureau of Land Management (BLM). The continued existence of gypsum wild buckwheat and its semiarid fragil habitat are being threatened by off-road vehicles, grazing, and possibly by the Brantley Dam Project (Water and Power Resources Ser-

vice, WPRS), if proper protection planning for the plant does not continue to occur. Both BLM and WPRS are cooperating to insure the continued existence of this plant; WPRS has revised plans for the Brantley Dam Project in order to assist in the conservation of this species.

Todsens pennyroyal, a member of the mint family occurs on steep, gravelly gypsum limestones on the White Sands Missile Range in Sierra County, New Mexico, on public lands administered by the Department of the Army. The

remoteness of this plant's populations and the restricted nature of the White Sands Missile Range afford it considerable protection. Yet its fragile habitat and the small number of known populations and individuals which comprise them combine to leave the species particularly vulnerable and in need of protection. The Army has stated its willingness to cooperate in efforts to protect this species.

Please consult the August 1980 BULLETIN for additional information on these two species.

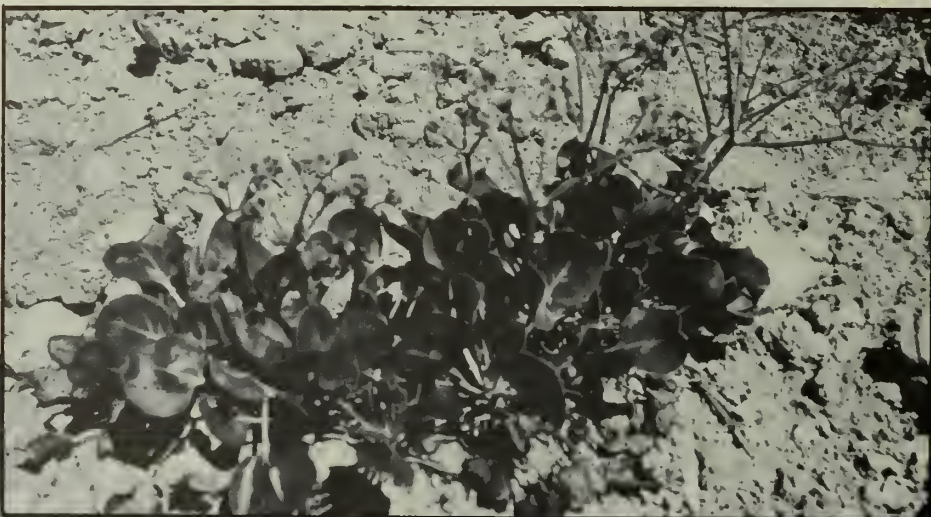


Photo by E. LaVerne Smith



Photo by E. LaVerne Smith

Gypsum wild buckwheat, a member of the knotweed family (Polygonaceae), measures about 8 inches high and is restricted to gypsum soils. Historically, gypsum wild buckwheat has been known from this locality for nearly 70 years.

HAWAIIAN TREE SNAILS

Continued from page 5

Background

In response to a petition from Mr. Alan D. Hart, the Service published a notice of review on *Achatinella* in the September 17, 1979, *Federal Register*. After additional data were received and analyzed, the genus was formally proposed as Endangered on June 28, 1980. Most agencies and individuals responding to the proposal, including the Governor of Hawaii, endorsed the listing action. Additional comments, mostly supportive, were received at a public meeting held in Honolulu on August 19, 1980.

This genus of tree snails, endemic to the island of Oahu, is known for its beauty, variability, and extreme localization among the different species. They are highly vulnerable to human activities because of their small geographic ranges, low reproductive rates, lack of defense mechanisms, and dependence on native forest conditions. Although *Achatinella* formerly occurred throughout the island's lowland valleys and coastal plains, live snails are now found only at higher elevations along the ridgetops of the Koolau and Waianae mountain ranges. It is believed that only 19 of the 41 *Achatinella* species still exist.

The most geographically isolated island group in the world, the Hawaiian archipelago comprises a unique but delicate ecosystem which has been drastically altered by human activity. One of the major factors in the decline of *Achatinella* has been the loss of suitable habitat. Because they are associated with particular plant species, these snails depend on relatively intact native habitat, which is rapidly diminishing in quality. Approximately 85 percent of the original forest cover has been destroyed or radically altered, primarily due to deforestation and the introduction of exotic plants. Most of the remaining native forest occurs at an altitude above 1,200 feet at the heads of ravines and upper valleys, and above 1,500 feet on the Koolau and Waianae ranges. The *Achatinella* below these areas have disappeared.

Even much of the remaining 15 percent of native forest habitat has been affected by occasional fires and the presence of feral mammals, especially pigs, which disturb the natural vegetation and encourage the spread of exotic plants. There are indications that predation by the introduced arboreal roof rat

(*Rattus rattus*) poses an additional threat to *Achatinella*. Many rat-gnawed shells have been found throughout the Waianae range.

Introduced Species Affect

Another serious threat to this genus is a carnivorous snail, *Euglandina rosea*, which in turn was introduced to control another imported species, the giant African snail, *Achatina fulica*. Since its introduction, *Euglandina* has increased dramatically in numbers and spread to the mountain forests where it preys on Oahu's native land snails. Associated with the presence of this exotic snail has been an increase in the native predatory flatworm *Geoplana* sp., which could cause yet further damage. Consequently, in areas where *Euglandina* is well established, *Achatinella* are usually very rare or absent.

Excessive human collection of *Achatinella* snails for their beautiful, varied, and often rare shells has also contributed to the decline of these species. Since each shell is unique in shape, size, color, and pattern, collectors took many of each variety. The most intense period of collecting was from 1830 to 1940. Two private collections alone, out of many made at the turn of the century, contain more than 100,000 shells. Some collecting of live snails for shell leis and other non-scientific purposes still takes place, and the growing popularity of hiking in Oahu's mountains

is exposing remnant *Achatinella* colonies to more people.

Effects of the Rulemaking

With regard to all species of the genus *Achatinella*, all prohibitions of Section 9(a)(1) of the Endangered Species Act will apply. Any taking of live *Achatinella* or their empty shells, except under permit for approved conservation purposes, will be illegal, as will be interstate and foreign trade in these snails. Further, although Critical Habitat was not designated, Federal agencies nevertheless will be required by Section 7 to insure that any actions they fund, authorize, or carry out will not be likely to jeopardize these species or their habitat.

Since the snails are found in rugged, often inaccessible terrain, it is possible that some individuals of those species thought to be extinct may still exist. If any are found, they will be automatically protected because the entire genus is classified as Endangered.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example: (F.R. 1/30/81—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

PUBLIC MEETINGS/HEARINGS

Species/Action	Affected State(s)	Location of Meeting/Hearing	Date	Time
Heliotrope milk-vetch (<i>Astragalus montii</i>): proposed E/C.H.	UT	Meeting: Courtroom County Courthouse 160 N. Main Street (Enter North Door) Manti, Utah	3/18/81	7:00 p.m.
Carter's panicgrass (<i>Panicum carteri</i>): proposed E/C.H.	HI	Meeting: Kahalu'u Elementary School Cafeteria, 47-280 Waihe'e Road Kaneohe, Hawaii	3/5/81	7:30 p.m.

E—Endangered
C.H.—Critical Habitat

DISCUSSION OF CITES MEETING SET

A public discussion of the events that occurred at the New Delhi meeting (February 28-March 9, 1981) and decisions taken by the Parties to the Convention will be held on March 13, 1981. The meeting is scheduled to take place from 1:30-4:00 p.m. in Rooms 7000 A and B in the Main Interior Building, 18th and C Streets, N.W., Washington, D.C.

SERVICE CORRECTS OVERSIGHT

Comments received from Monitor, a Washington based environmental organization, were inadvertently omitted from the Service's final rulemaking on the reclassification of the red lechwe (*Kobus leche*) as a Threatened species (F.R. 10/1/80). The Service regrets this oversight and published a summary of Monitor's comments in the January 14, 1981, *Federal Register*. The Service found that no change in its final rule is warranted by the comments.

NEW PUBLICATIONS

Insect Conservation, reprinted from the *Annual Review of Entomology*, Vol. 26, 1981, is available in a limited supply

BOX SCORE OF SPECIES LISTINGS

Category	Endangered		Threatened		Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	241	3	21	279
Birds	66	159	3	0	214
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	34	15	12	0	57
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	6	1	13
Plants	51	2	8	3	61
TOTAL	234	489	50	29	749

Number of species currently proposed: 18 animals
11 plants

Number of Critical Habitats listed: 48
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 39
Number of Cooperative Agreements signed with States:
37 (fish & wildlife)
8 (plants)

January 31, 1981

The Box Score does not reflect the listings of the genus Achatinella, gypsum wild buckwheat, Todsens pennyroyal, or Texas poppy-mallow because of the delay in the effective dates for these rulemakings.

from the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240. This paper examines the history of insect conservation awareness and efforts, the causes of insect losses and declines, recent conservation measures, and the outlook for future insect protection.

Hawaii's Vanishing Flora, First Edition, December 1980, by Bert Y. Kimura and Kenneth M. Negata was recently published. For information on its availability contact The Oriental Publishing Co., P.O. Box 22162, Honolulu, Hawaii 96822.

Copies of *The Administration of the Marine Mammal Protection Act of 1972* are available by writing the Director (PUB), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. This report reviews Service activities conducted with eight species of marine mammals under the jurisdiction of the Department of the Interior, as assigned by the Marine Mammal Protection Act of 1972. Endangered and Threatened marine mammal species (specifically the West Indian manatee and the sea otter in California) are discussed in the report.



ENDANGERED SPECIES TECHNICAL BULLETIN



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Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

February 1981, Vol. VI, No. 2



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Service Reviews Woodland Caribou Status

The Service has accepted two petitions to add a small population of woodland caribou (*Rangifer tarandus caribou*) to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 2/9/81). Found in northern Idaho, northeastern Washington, and southern British Columbia, this herd is believed to consist of only 20-30 individuals, and is the only herd of caribou still regularly using territory in the conterminous United States.

The woodland caribou is a subspecies of *Rangifer tarandus*, which also includes the reindeer of Eurasia. This subspecies' range once extended from southeastern Alaska and British Columbia to New Foundland and Nova Scotia. In the conterminous United

States, populations are known to have occurred in Washington, Idaho, Montana, Minnesota, Wisconsin, Michigan, Vermont, New Hampshire, and Maine. Killing and habitat alteration by humans accelerated the caribou's disappearance from New England and the Great Lakes States (which occurred by around 1908 and 1940, respectively).

Known as the Selkirk Mountain Herd, these last few remaining caribou in the United States are threatened by continuing habitat reduction. Extensive clearcut logging and fires appear to have seriously reduced the spruce-fir forest on which the subspecies depends for food and cover. Also, human access to caribou habitat via improved

roads, snowmobiles, and utility routes may be contributing to harmful disturbances of caribou.

In view of information presented in the petitions, the Service is now assembling supporting information needed to propose listing the woodland caribou and determine its Critical Habitat.

SERVICE UNDERTAKES FIVE-YEAR REVIEW OF SPECIES

As required under the Endangered Species Act of 1973, as amended, the Service must conduct a review of all listed species at least once every five years. The Service has published a notice (F.R. 2/27/81) that it will review the status of species listed during 1975 and 1976, except those subsequently reclassified for all or a significant part of their populations.

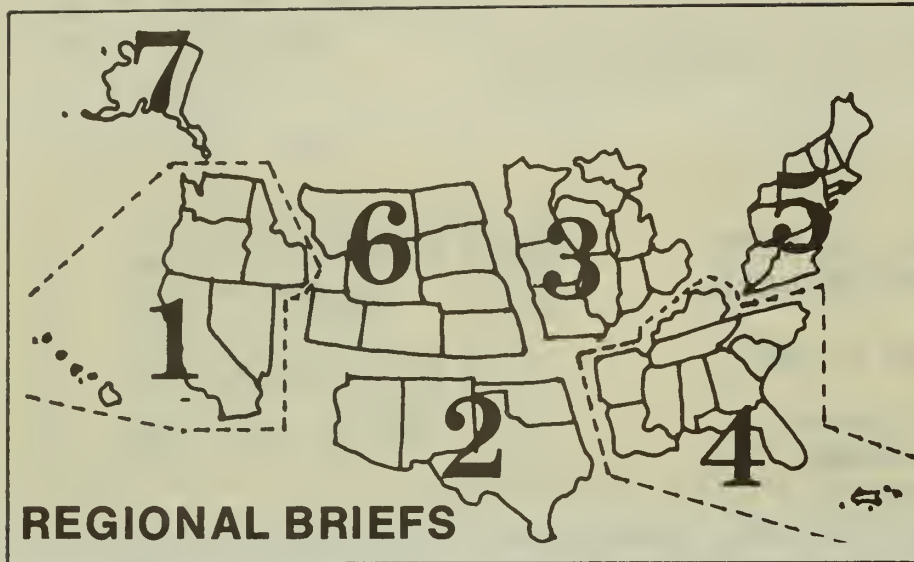
To assist in conducting this review of 202 species, the Service is requesting, from any party, data which might document the need to delist or reclassify any of the species subject to the review.

We regret that due to space limitations we are unable to publish a list of affected species, but ask that you consult the February 27, 1981, *Federal Register*.

Comments and data should be sent to the Director (OES), Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C. 20240, and must be received no later than June 29, 1981.



Additional information on this small herd of woodland reindeer is sought by the Service.



Endangered Species Program regional staffers have reported the following activities for the month of February.

Region 1. The second bald eagle conference was held in Klamath Falls,

U.S. Fish and Wildlife Service Washington, D.C. 20240

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(202-343-4717)

Ronald E. Lambertson
Associate Director and
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(202-343-4646)

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John Spinks, Chief,
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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. Region 2: Arizona, New Mexico, Oklahoma, and Texas. Region 3: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Region 4: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. Region 5: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Region 6: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Region 7: Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Oregon. Sponsors of the conference were, again, the Portland Chapter of the Audubon Society, the Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and the National Wildlife Federation.

Region 4. In a biological opinion issued to the Tennessee Valley Authority (TVA) in September 1979, the Service agreed to the completion of Columbia Dam on the condition that TVA develop a successful conservation program for the Endangered mussels to be impacted by the dam. The resulting conservation program has an ultimate objective of establishing new populations of the two affected species, birdwing pearly mussel (*Conradilla caelata*) and Cumberland mon-keyface pearly mussel (*Quadrula intermedia*), in other locations.

Before transplanting any of the mussels, however, additional information is needed as to which fish species serve as hosts for the mussels' parasitic larval stage so that prospective transplant sites can be evaluated for the presence of suitable fish hosts. TVA made considerable progress toward this objective during 1980. At least one species of darter, *Etheostoma zonale*, and possibly a second, *E. blennoides*, were found to carry the glochidia of *Conradilla caelata* until transformed into juvenile, free-living mussels. Additional experiments are planned for 1981.

Region 5. Service personnel testified before the Vermont Senate Committee on Energy and Natural Resources regarding the State's proposed endangered species bill. If the bill is passed, the State could enter into a Cooperative Agreement with the Service.

Region 6. Meetings between our Service, the Water and Power Resources Service, and the Northern Colorado Water Conservancy District (NCWCD) have resulted in the NCWCD passing a resolution in favor of a \$550,000 program aimed at minimizing impacts of the Windy Gap Project on the recovery of several species of Endangered fishes in the Colorado River drainage. The program will include a 3-year evaluation of habitat improvement techniques for the Endangered fish species in the Grand Junction, Colorado area and collection of physical data needed to assess the impacts of water depletions, sedimentation, and water quality changes on the life cycles of the fishes. Also, the program would involve the creation or modification of backwater habitat areas along the Colorado River mainstream between the upper end of DeBeque Canyon and the confluence of the Colorado River and the Green River.

RECORD FINE PAID IN ENDANGERED SPECIES IMPORT CASE



In a case involving the use of a protected species of snake in the manufacture of shoes, a Massachusetts firm agreed to pay a fine of \$15,000 and forfeit 1,325 pairs of shoes which had been seized by U.S. Fish and Wildlife Service agents. The \$15,000 fine, which was paid on January 6, 1981, is the largest penalty ever paid in an Endangered Species case in New England.

The case, which was settled out of court, involved the use of reticulated python (*Python reticulatus*), protected under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). On December 11, 1978, a shipment of boxes labeled "cobra" and containing "leather footwear for

Fish and Wildlife Service wildlife inspector Ronald Varey with shoes made from reticulated python.

ladies," arrived in Boston for Joan and David Helpern, Inc. A U.S. Customs inspector turned over several of the shoes to the Fish and Wildlife Service for examination. Experts from a local university and the Bronx Zoo determined that the leather used was not cobra, but rather reticulated python.

Based on these findings, the Service's Division of Law Enforcement decided to examine other shoes, invoices, and bills of lading at the Joan and David Helpern, Inc., warehouse. Agents determined that the Helpern firm imported from Italy, 1,983 pairs of shoes made from reticulated python from December 11, 1978, to February 13, 1979. Service agents seized 1,325 pairs of shoes estimated at a gross value of \$106,000.

The Department of the Interior's Regional Solicitor's Office charged the Helpern firm with 20 counts under the Endangered Species Act, including importing wildlife products through a non-designated port, failure to declare wildlife parts and products, and failure to provide proper documentation in the form of re-export permits required under the Act and the CITES.

SURVEY OF MEXICIAN BEACHES CONFIRMS LEATHERBACK NESTING

What may be the world's largest nesting grounds for the Endangered leatherback sea turtle (*Dermochelys coriacea*) was observed in early November on the west coast of Mexico, according to the World Wildlife Fund-U.S. Dr. Peter C. H. Pritchard, Director of the Fund's Marine Turtle Conservation Project and Senior Vice President of the Florida Audubon Society, conducted an aerial survey of more than 600 miles of the Pacific coastline of Mexico and witnessed high density nesting in an area known to Mexican authorities as leatherback habitat. Leatherbacks were found nesting along about half of the surveyed area, roughly from the State of Oaxaca, southward.

Because of new figures resulting from this survey, the estimate for the number of adult breeding female leatherbacks in the world has increased from 29,000-40,000 to 104,000. Dr. Pritchard cautions that the new estimate merely reflects more accurate data, and not a safe population level. According to Dr. Pritchard, "Because of severe stresses on all major populations of the species, its Endangered status is still considered justified."

The leatherback sea turtle is the

largest of the world's marine turtles, weighing between 660 and 1,300 pounds as adults. This turtle is threatened by killing for local consumption and sale of meat and poaching of eggs. Their eggs are considered a delicacy wherever they are found, and leatherback oil is used to caulk boats in the Persian Gulf. Mexican law prohibits killing of leatherbacks, but the practice continues.

Observation of the leatherback nesting grounds was incidental to aerial surveys conducted for a project involving the green sea turtle (*Chelonia mydas*). Funded by the World Wildlife Fund-U.S. and the U.S. Fish and Wildlife Service, this project involves moving eggs to protected areas where they will have a greater chance of successful hatching. Left at unprotected natural sites, "virtually all of the eggs laid annually at these beaches would be lost," due to poachers, selling in local markets, predation by dogs, or other natural factors, according to Dr. Pritchard. During the previous nesting season, almost 270,000 eggs had been moved to protected corrals on natural nesting beaches in Michoacan, Mexico. Of these, about 15,000 had been

Continued on page 6

BAY CHECKERSPOT BUTTERFLY STATUS REVIEW

The Service is reviewing the status of the Bay checkerspot butterfly (*Euphydryas editha bayensis*) to determine if it should be added to the U.S. List of Endangered and Threatened Wildlife and Plants. Of the 16 known populations of this butterfly, 14 are extinct or nearly extinct because of housing development, highway construction, livestock grazing, and drought.

Restricted to serpentine grasslands in the San Francisco Bay region of California, the two remaining colonies of this butterfly are Jasper Ridge, on Stanford University's Jasper Ridge Preserve, and Edgewood, in Mateo County.

The Service is seeking the views of the Governor of California regarding proposing this species as Endangered or Threatened. Other interested parties are invited to submit factual information concerning the status of the Bay checkerspot butterfly. Comments and data should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, by April 1, 1981.

Terry Grubb and Barbara Holder, wildlife biologist volunteers in the Washington Eagle Study, banding a bald eagle at a San Juan Island eagle nest.



WASHINGTON STATE REPORT:

FAUNA OF SPECIAL CONCERN



WASHINGTON
DEPARTMENT OF GAME

Responsibility for the management of Washington State's over 500 non-game wildlife species belongs to its Department of Game. A Nongame Program was established within the Department in 1973, and is now headed by Mr. Jon A. Gilstrom, Program Manager.

Funding for the Nongame Program is produced through a State "vanity license plate" program which was instituted in 1973 by a State legislative referendum. The program which offers personalized automobile tags to private citizens, produced \$40,000 in its first year—in 1980 the program netted \$418,000 for State nongame species management.

Over a dozen conservation groups in the State actively promoted the es-

tablishment of the "vanity license plate" program and were helpful in securing public support. The Washington public voted in favor of the legislative referendum by a 2 to 1 margin.

Federal Assistance

Washington's Nongame Program was well underway, when the U.S. Fish and Wildlife Service signed the first State Cooperative Agreements under Section 6 of the Endangered Species Act of 1973. Washington State was among the first 11 States to sign an agreement with the Service on June 23, 1976, thereby qualifying for two-thirds funding on a number of endangered species projects.

Three species native to Washington

are listed for protection under the 1973 Act, as amended: American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), and Columbian white-tailed deer (*Odocoileus virginianus leucurus*). Over the past 4 years, all of these species have been subjects of State field work funded through the grant-in-aid program.

American Peregrine Falcon

Presently, there exist no published studies on the peregrine in Washington State. Illustrative of the lack of peregrine data in the State is the fact that disagreement exists, even as to which subspecies (*anatum* or *pealei*), or both, occur in Washington as breed-

Recent studies indicate that Washington State hosts a relatively large population of American peregrine falcons.



Photo by Amos Eno

ing birds.

However, one detailed field study on the winter ecology of the peregrine in the Puget Sound area was conducted by Clifford M. Anderson and Paul DeBruyn. The study, which began in 1976 and was continued under contract to the State from 1978-1980, included radio-monitoring of peregrine movements in the Puget Sound area. The team succeeded in tracing the migratory pattern of one falcon which proved to nest in south-central British Columbia, Canada, and winter in Washington, giving strong reason to believe that the falcon was of the *anatum* subspecies, rather than *pealei*.

In 1978, in an effort to establish an estimate of a breeding population in the State, the Nongame Program initiated a peregrine study to gather habitat utilization data. One facet of this study was to search existing literature, extract all eyrie and sighting records from the data and pinpoint them on maps for future investigation. Since that time, all known historic eyries have been visited by State personnel, but none were found to be active. However, three other active sites were found, two of which produced young in 1980.

Cumulative results of the peregrine study indicate that the wintering population of peregrines in Washington is relatively large and that Washington, indeed, is an important habitat area for the falcon. Peregrines have been sighted mainly in Grays' Harbor, the Samish Bay area, and Willapa Bay.

Other results of the study include the determination of the peregrine prey species in the Samish area, an analysis of prey remnants from nests, and a preliminary study of egg shell thinning from fragments found in a single nest. (No thinning was apparent from this sample.)

A new population of Columbian white-tailed deer was found on islands in the Columbia River.



Photo by Columbian White-tailed Deer National Wildlife Refuge/U.S. F.W.S.

Aerial surveys of the mountainous areas of Washington have been conducted, during which habitat was subjectively categorized as to potential for peregrine use. Areas of high probability were noted on maps for future searches.

The Nongame Program is considering the possible release of captive-bred falcons into the State in the near future.

Public Awareness of Bald Eagles

Four public service announcements (PSA's) produced last fall by the Washington Eagle Study, a facet of the State Nongame Program, have gone a long way towards informing Washingtonians regarding the bald eagle. These four spots have been shown repeatedly in prime-time on the main Seattle TV stations, since last fall. The PSA's cover four separate topics: (1) the fact that eagles exist in Washington; (2) the effects of human disturbance on eagles; (3) bald eagle dependence on natural runs of anadromous salmon; and (4) the communal nature of bald eagles.

In June 1980, a Bald Eagle Symposium featuring 24 separate talks on bald eagles in Washington, surrounding States, and British Columbia, was conducted. The symposium, while in-

itiated by the Washington Eagle Study, was actively supported by nine conservation groups in the State. Proceedings from this symposium are now available (see New Publications—last page of this BULLETIN).

Another indication of interest in bald eagles is demonstrated by the fact that nearly 800 Washingtonians participated in the 1981 winter bald eagle survey sponsored by the National Wildlife Federation. Interest in nesting populations in Washington is nurtured by the Washington Eagle Study personnel who individually contact owners of bald eagle nest habitat, give them a record of nest productivity on their land each summer, and conduct "circuit talks" in the Skagit area, speaking to habitat user groups.

Bald Eagle Habitat

Eagles inhabit river, lake and coastal shorelines almost exclusively. Active nest sites in Washington are found predominantly in the San Juan Islands, on the Olympic Peninsula and on Puget Sound. In winter, eagles tend to congregate in numerous areas but are especially abundant on the northwest Washington salmon drainages.

The question of movement to and from Washington is still speculative

Continued on page 6

STATE REPORT

Continued from page 5

although information is beginning to accumulate from marking and radio-tagging studies. The source of most wintering subadults appears to be coastal and interior British Columbia, the San Juan Islands, and southern Alaska. Further research is needed to delineate the migratory paths of adult birds to nesting territories.

Until recently, surprisingly few formal studies of bald eagles in Washington were conducted and the results of those which were done in the past decade do not provide a complete understanding of the species life history. However, if bald eagles are to remain in Washington, it is clear that

habitat (i.e., nesting territories, food sources and feeding grounds, perching and roosting sites) must be protected.

Ongoing eagle studies which began in 1979 are being carried out by the Washington Eagle Study. The program, partially funded by Federal Aid, has as its objectives to identify the nesting and wintering ecology of the bald eagle in Washington and to provide a strong education and management program for the eagle.

In June 1980, ten bald eagle nest trees were climbed (one nest was on the Washington coastline while the other 9 were on the San Juan Islands) and a total of 13 young eagles were banded with U.S. Fish and Wildlife Service bands. These were the first nest trees ever to be climbed and the

first eaglets ever banded in Washington.

The same studies included the collection of prey remains from each of the 10 bald eagle nests investigated. Chief prey species were found to be glaucous-winged gulls (*Larus glaucescens*) and European rabbits (*Oryctolagus cuniculus*). Analysis of the gull remains showed levels of contamination which should be monitored; the rabbits, however, tested "clean." Blood for pesticide, heavy metal, and PCB analysis was taken from the 11 eaglets, as well as cloacal swabs for viral and bacterial analysis.

A literature search and annotated bibliography on Washington bald eagles was completed several years ago. Continued studies will help define and delineate the bald eagle popula-

LEATHERBACK NESTING

Continued from page 3

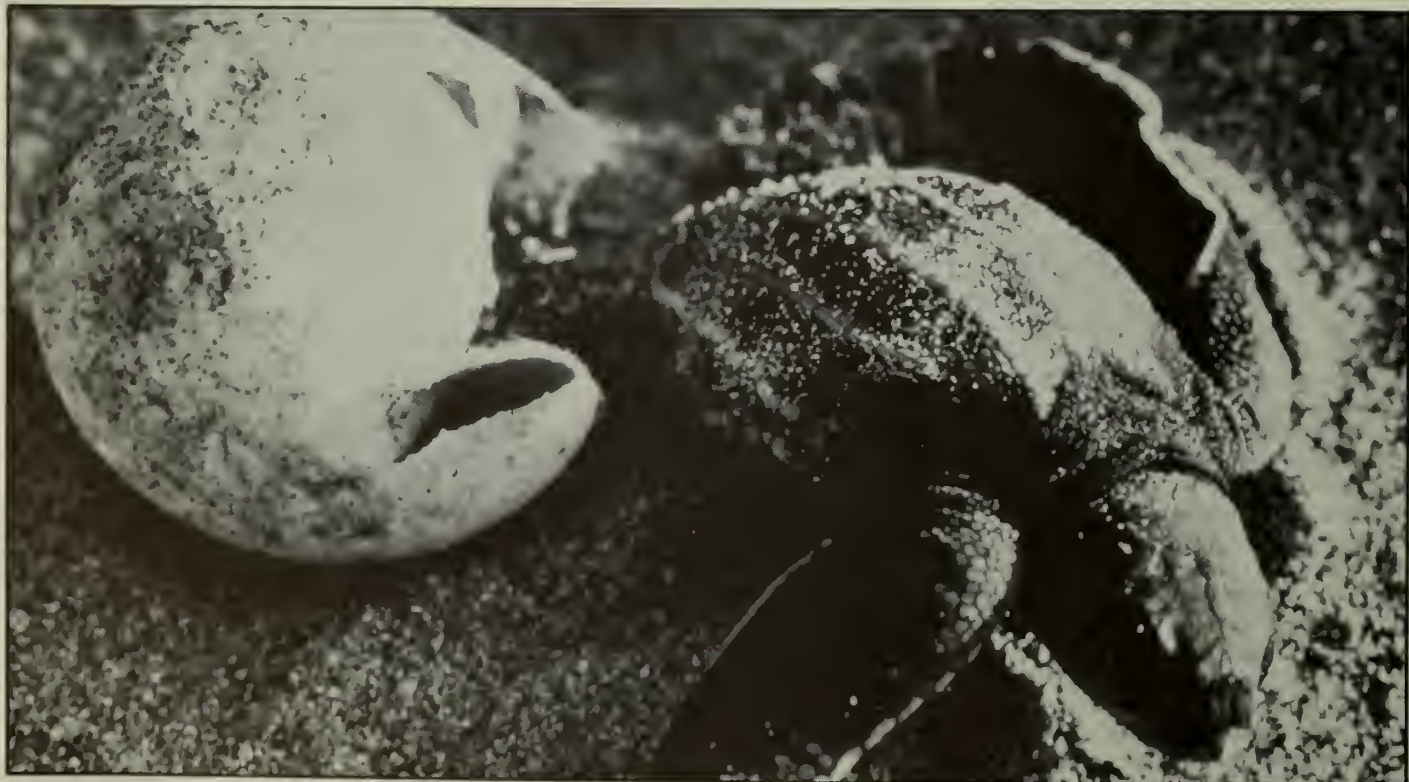
confiscated from poachers.

Dr. Pritchard reported that the presence of his small aircraft acted as a deterrent to illegal hunting. Virtually all daytime turtle hunting at sea was eliminated, as fishermen, mindful of the aircraft overhead, appeared to be afraid of being discovered and having their boats and motors confiscated.

In the U.S., the Fish and Wildlife Service and the National Marine Fisheries Service (NMFS), which share Federal responsibility for protecting sea turtles, have each designated Critical Habitat for the leatherback sea turtle. The only major leatherback nesting area under U.S. jurisdiction, Sandy Point Beach, St. Croix, U.S. Virgin Islands, was designated as Critical Habitat by the Fish and Wildlife Service (F.R. 9/26/78). NMFS designated the adjacent waters (F.R. 3/23/79) which are used for breeding

and access to and from the nesting beach. The designations require Federal agencies to insure that actions they authorize, fund, or carry out are not likely to result in the destruction or adverse modification of these Critical Habitats.

As for other areas that may also be used by leatherbacks for nesting, Jack Woody of the Service's Albuquerque Regional Office says there is suspected leatherback nesting in Central America, but there has not been time or funds available to investigate.



This just-hatched leatherback sea turtle, measuring 2½ inches long and weighing 1 ounce, will grow to as much as 1,300 pounds as an adult.

Photo courtesy of World Wildlife Fund-U.S.

tion in Washington.

Columbian White-tailed Deer

The Endangered Columbian white-tailed deer was once abundant in the low and moist prairie habitat of the Willamette River Valley of Oregon and northward across the Columbia River into the river valleys of southern Washington. Suppression of burning by the Indians and conversion of land for agricultural uses have eliminated native-herb association upon which the deer depended. The animal was also shot for food and sport until early in this century, by which time they were extirpated from most of their former range.

It was not until 1972, when the Columbia White-Tailed Deer National

Wildlife Refuge (CWTD-NWR) was created that applied research of the species occurred on a regular basis. As a result, data pertinent to the needs of the lower Columbian population have only recently become available.

The refuge herd now numbers approximately 150-200 individuals, and is biologically secure. The potential for total eradication of the refuge herd and nearby deer through disease or other catastrophic events is recognized, however, and emphasis on off-refuge conditions will, of necessity, become the focal point of future studies. Accordingly, the Columbian White-Tailed Deer Recovery Plan calls for establishment of five independent subpopulations, totaling 600+ animals, as a means of attaining taxonomic security. Capturing and transplanting animals on selected sites, and the location of yet undiscovered individuals are two methods suggested in the Plan.

A survey of islands in approximately 107 miles of the Columbia River, conducted by biologists of the Washington Nongame Program in 1978 and 1979, yielded valuable information for the management and survival of the deer. A previously undiscovered population, numbering between 70-80 individuals, was found on a cluster of five islands (Wallace, Anunde, Kinnunen Cut, Little Wallace, and Skull).

Three additional islands (Government, Cottonwood, and Crims) were also identified as potential transplant sites for the species. Unfortunately, these islands have been covered with dredge material removed from the river following the recent eruption of Mt. St. Helens.

Prior to the survey, only two populations of the white-tailed deer were known to exist west of the Cascades. One of the groups, which includes the CWTD-NWR herd, is along the lower portion of the Columbia River. The second is in Douglas County, Oregon, and is known as the Roseburg population.

The Nongame Program also recently sponsored a Columbian white-tailed deer forage-relations study, done through the University of Washington. This study, conducted on the CWTD-NWR should assist in clarifying feeding and habitat preferences of the species. The study included the development of habitat selection guidelines for use in reestablishing the deer in selected former habitats.

Other Species of Concern

The Nongame Program has given special emphasis to a number of other State species whose status are not

well known. Among these are Cascade red fox (*Vulpes vulpes necator*), white pelican (*Pelecanus erythrorhynchos*), ferruginous hawk (*Buteo regalis*), and Larch Mountain salamander (*Plethodon larselli*).

Data Collection

The emphasis of the Nongame Program in its initial years of existence was mainly that of collecting species' data since very little management information was available. Subsequently, a data bank and retrieval system was developed, in conjunction with the Washington Natural Heritage Program, to store and collate data on sensitive animal and plant species in the State.

Over 100,000 records from the scientific literature, interview information, museums, information from field personnel and individual observations, have been collected on nongame species since 1977. Over 7,000 records on approximately 228 animal species of concern have been computerized, providing rapid access to species specific or location specific data. This service has been in existence since the fall of 1980.

Information which is accepted for the data bank must be on species which meet the following criteria. They must be: (1) vulnerable to impacts do to (a) specialized ecological requirements, (b) population concentrations, (c) threats by land practices or pollution; (2) rarity; or (3) uniqueness or specific scientific value. The data bank is utilized as a resource from which the State counsels planning commissions, State and Federal agencies, and individual landowners in efforts to maintain essential habitat from development and/or other disturbances.

Fact sheets, written from information contained in the data bank on approximately 50 different nongame species of concern, are now in preparation and are tentatively scheduled for completion by the fall of 1981.

Plant Conservation

Washington State has a second Cooperative Agreement with the Federal Government—this one for the conservation of native plants. Funds made available from this agreement made between the Service and the Washington Department of Natural Resources are currently assisting with the accomplishment of plant surveys and other efforts to gather and evaluate data. The plant program is carried out by the Nature Conservancy staff in the Washington Natural Heritage Program.

The BULLETIN staff hopes to feature State plant conservation programs within the next few months.

SYMPOSIUM

The Georgia Department of Natural Resources and the Georgia Chapter of The Wildlife Society are sponsoring a Nongame and Endangered Wildlife Symposium, to be held August 13-14, 1981, in Athens, Georgia.

Nearly 30 speakers from a dozen States will present papers on nongame/endangered species research and management, status reviews, legislation, funding, and law enforcement. The symposium will be held at the University of Georgia Center for Continuing Education.

For further information, write Department of Natural Resources, Nongame/Endangered Species Program, Route 2, Box 119A, Social Circle, Georgia 30279.

CORRECTION IN ZEBRA LISTING

The Service has published a correction (F.R. 2/10/81) of an error in the listing of the mountain zebra (*Equus zebra*), appearing in the May 20, 1980, Republication of Lists of Endangered and Threatened Species. In that republication, *Equus zebra* was listed as an Endangered species when actually, only the subspecies *E. z. zebra* is officially classified as an Endangered species. The other subspecies of mountain zebra, *E. z. hartmannae*, is listed as Threatened (F.R. 8/21/79). *E. z. hartmannae* is also listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, thus allowing for import of legally taken sport hunting trophies.

The Service regrets any misunderstanding or inconvenience caused by the error.

NEW PUBLICATIONS

Rare Plant Conservation: Geographical Data Organization, to be published May 1, 1981, by the New York Botanical Garden, contains 24 papers based on lectures and discussions at a November 1977 symposium. Included are guidelines for the preparation of status reports on rare or endangered plant species, as well as the text of the Endangered Species Act of 1973, with discussions of the 1978 and 1979 amendments. During a special pre-publication offer, which expires May 1, this book will be available for \$19.95 plus postage and handling. After May 1 the price will be \$25.00 plus postage and handling. Postage and handling is \$1.25 for U.S. orders, and \$2.00 for non-U.S. orders. Send orders to *Rare Plant Conservation*, Publications office, The New York Botanical Garden, Bronx, New York 10458.

Placing Animals and Plants on the List of Endangered and Threatened Species, a new brochure developed by the Service's Endangered Species Program, is now available. As well as explaining the listing process, this pamphlet includes an outline of data needed to support petitions for listing species under the Endangered Species Act of 1973, as amended. To request a copy, write to the Office of Endangered Species, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

A comprehensive reference entitled *Mammalian Status Manual* provides an account of mammalian species and subspecies considered to be endangered, threatened, and rare within each of the fifty reporting States. This publication is available for \$18.95 from Linton Publishing Company, Box 998, Route 6, North Eastham, Massachusetts 02651.

BOX SCORE OF SPECIES LISTINGS

Category	Endangered		Threatened		Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	241	3	21	279
Birds	66	159	3	0	214
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	34	15	12	0	57
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	6	1	13
Plants	51	2	8	3	61
TOTAL	234	489	50	29	749

Number of species currently proposed: 18 animals
11 plants

Number of Critical Habitats listed: 48

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 39

Number of Cooperative Agreements signed with States:

37 fish & wildlife

8 plants

February 28, 1981

The Box Score does not reflect the listings of the genus Achatinella, gypsum wild buckwheat, Todsen's pennyroyal, or Texas poppy-mallow because of the delay in the effective dates for these rulemakings. (See February 1981 BULLETIN.)

Copies of the *Proceedings of the Washington Bald Eagle Symposium, June 1980*, edited by Knight, Allen, Stalmaster, and Servheen are available for \$10.00 from the Nature Conservancy, 618 Smith Tower Building, Seattle, Washington 98104.

Assistance in locating copies of the *Federal Register*, may be found by consulting the complete listing of *Government Depository Libraries*, available free from The Library, U.S. Government Printing Office, 5235 Alexandria Avenue, Alexandria, Virginia 22304. Depository libraries throughout the country carry both the *Federal Register*

and the *Code of Federal Regulations*, the repositories of all the Federal government's planned and promulgated rules and regulations.

The Worldwide Distribution of Sea Turtle Nesting Beaches, compiled by James Sternberg, has been published by the Sea Turtle Rescue Fund, Center for Environmental Education. The publication contains six maps, providing the most exhaustive compilation of data to date, and an introduction by Peter Pritchard. To order, send \$6.95 to the publishers at 1925 K Street, N.W., Suite 206, Washington, D.C. 20006, or call 202/466-4996.



ENDANGERED SPECIES TECHNICAL BULLETIN



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March 1981, Vol. VI, No. 3

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SERVICE LIFTS KANGAROO IMPORT BAN

A ban on the commercial importation of the red kangaroo (*Megaleia rufa*), eastern gray kangaroo (*Macropus giganteus*), and western gray kangaroo (*Macropus fuliginosus*), has been lifted by the Service, effective May 29, 1981 (F.R. 4/29/81). According to the Service, four Australian States have established that their management programs are effective and that commercial importation of kangaroos, and their parts or products, will not be detrimental to the species.

The importation ban had been in effect since December 30, 1974, when these species were listed as Threatened. At that time the Service stated that it

would require a certificate from the Australian Government insuring that a State had developed an effective sustained-yield management program, and that taking would not be detrimental to the species, before allowing commercial importation of any such wildlife originating from that State.

Although kangaroo populations appear to be abundant now, the Service maintains that a Threatened classification is still warranted. Previously, all three of these species seem to have been overexploited, a condition which could conceivably occur again. Also, it is not unusual for all three species to experience periods of great abundance followed by periods of relative scarcity. In addition, none of these species are protected under any international trade control. These factors led the Service to continue its Threatened listing of these kangaroos.

Australian Management Programs

The Australian States in question (Queensland, New South Wales, South Australia, and Western Australia) have all complied with the Service requirements. In Queensland, all 24 species of the family Macropodidae are protected by law. Kangaroo populations are continuously monitored and safe harvesting levels are determined on an annual basis. Other than short-term seasonal fluctuations, no adverse downward trends in the size of the harvest have been observed over many years.

Shooters in Queensland must have permits, are restricted to a particular "fauna district," and must obtain written permission from the landholders on whose properties they shoot. Tags must be purchased from the State fauna



Photo by Amos Eno

Australian management of kangaroos has led to the Service's lifting of the ban on imports.

authority and attached to kangaroos taken. Quotas will be controlled by the number of tags issued.

New South Wales is divided into management areas. Several of these, which together form an area greater than one-third of the State, are closed to commercial hunting. Where commercial hunting is allowed, either a license or the services of a licensed professional shooter must be obtained. These shooters are limited in number and are restricted to a particular management zone. Other safeguards in this State include the regulation of minimum weights of carcasses and lengths of skins which may be legally taken, and a requirement that wholesalers and retailers trading in kangaroo meat or products keep records of all transactions on pre-

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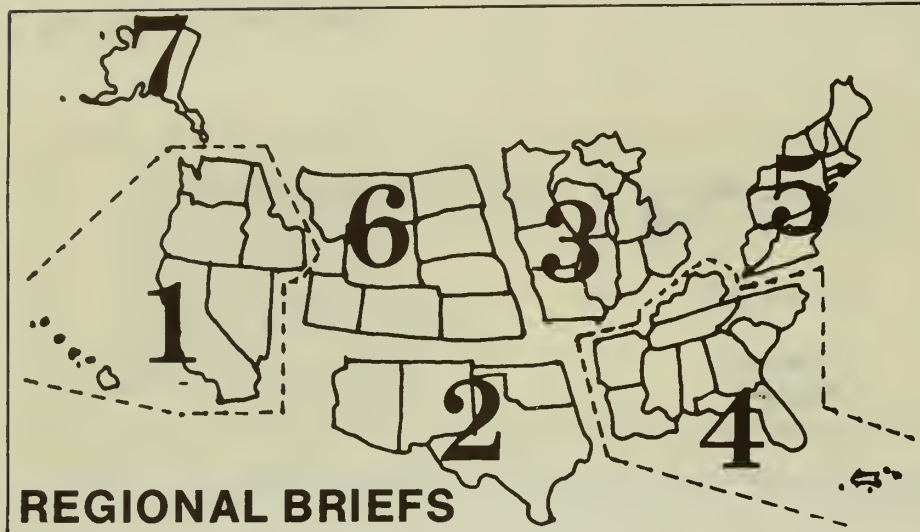
BULLETIN MAILING LIST SCHEDULED FOR CUT

Due to budgetary restraints, we must limit the distribution of the BULLETIN to Federal employees only. The names of all other persons currently receiving the BULLETIN will be removed from the mailing list prior to distribution of the June 1981 BULLETIN.

All Federal employees who now receive the BULLETIN should make certain that their agency affiliation is noted on the mailing label affixed to this copy. If it is not, they should write the editor asking that the address be modified to include the name of their Federal employer.

We regret that service cannot be continued to all our readers.

The Editor—



Endangered Species Program regional staffers have reported the following activities for the month of April.

Region 1. The California Least Tern (*Sterna albibrons browni*) Recovery Plan has been printed and will be distributed through the Fish and Wildlife Reference Service in Denver.

The Regional Office has copies available of abstracts of papers presented at the Symposium on Threatened and Endangered Plants, held in Ashland, Oregon, in July 1980.

Region 2. Jack Woody and David Bowman went to Brownsville, Texas, to help set up the fourth Kemp's Ridley sea turtle (*Lepidochelys kempii*) camp at

Rancho Nuevo, Mexico. The field crew was trained and given assistance in transporting equipment necessary for egg collection and incubation and adult turtle banding. The camp, which was set up as of April 15, received its first nesters the next day.

The Rancho Nuevo sea turtle operation is an extremely delicate one, representing an international cooperative effort between the United States and Mexico. There have been several instances in past seasons of unexpected visitors at the facility. The camp is not equipped to handle visitors who have not made prior arrangements with Mexican officials. Any person desiring to visit this season must coordinate with Jack Woody, Region 2, well in advance, or they may not be accepted in the camp by Mexican personnel.

The headstarted Kemp's Ridley turtles from last season will be released on June 3 off the Padre Island National Seashore by the National Marine Fisheries Service (NMFS). The turtles, not yet one year old, number between 1,500 and 2,000. The Galveston NMFS laboratory, home of this headstart program, is scheduled to close. Alternative arrangements are being explored for continuing the program for this most endangered of all sea turtle species.

A reintroduction program for the Colorado squawfish (*Ptychocheilus lucius*) has been initiated through the cooperative efforts of the Service and the States of California, New Mexico, Arizona, and Utah. The stocking proposal has been actively accepted by Arizona and New Mexico, with California and Utah giving serious consideration to future participation.

A joint U.S.-Mexican Yuma clapper rail (*Rallus longirostris yumanensis*) survey plan has been developed, with the U.S. portion of the survey ongoing, and the Mexican portion beginning in early May.

Region 3. Section 7 training was held for personnel in the East Lansing Area Office.

Region 4. The third Florida panther (*Felis concolor coryi*) to be road killed in south Florida in about the last year and a half was found dead along State road 29 on the morning of April 19. This panther was a pregnant female.

A snail darter (*Percina tanasi*) recently found in the Sequatchie River, a Tennessee River tributary west of Chattanooga, has prompted additional surveys to re-evaluate the species' true distribution. So far, at least one large group of young-of-the-year snail darters (possibly numbering in the thousands) has been found in Sewee Creek in Meigs County, Tennessee, and a few scattered individuals have been found at new locations in the Tennessee River main channel. Three more snail darters were found in the Sequatchie River in late April, and there is a possibility that a substantial

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Region 5, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100): Howard Larsen, Regional Director; Gordon T. Nightingale, Assistant Regional Director; Paul Nickerson, Endangered Species Specialist.

Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209): Don W. Minnich, Regional Director; Charles E. Lane, Assistant Regional Director; Don Rodgers, Endangered Species Specialist.

Region 7, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-276-3800, ext. 495): Keith M. Schreiner, Regional Director; Jon Nelson, Ass't Regional Director; Dan Benfield, Endangered Species Specialist.

U.S. Fish and Wildlife Regions

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population is present. However, high water conditions have precluded adequate sampling to date. The recovery team plans to meet in September for a status review and discussions on whether to recommend reclassification or delisting of the species.

As part of a continuing review of the Kentucky cave shrimp (*Palemonias ganteri*), known only from Mammoth Cave National Park, the National Park Service has solicited bids for a status survey of the species and has tentatively selected a contractor. The cost of the project will be shared by the Fish and Wildlife Service if the contract is given final approval.

Region 5. An attractive poster featuring the Endangered peregrine falcon (*Falco peregrinus*) was recently developed and is available from the Regional Office.

Region 6. The January issue of the BULLETIN discussed a complaint filed in U.S. District Court in *Cabinet Mountains Wilderness/Scotchman's Peak Grizzly Bears, et al. v. Peterson, et al.* The complaint involved a mineral exploration program approved by the U.S. Forest Service in the Kootenai National Forest, Montana. The Service prepared a biological opinion on the effects of the operation on the grizzly bear (*Ursos arctos horribilis*).

On April 15, 1981, the court denied the plaintiff's motion for summary judgment and upheld the Fish and Wildlife Service determination that the exploration activities were not likely to jeopardize the continued existence of the grizzly bear. The decision stated, 1) that the defendants have met their burdens under both the Endangered Species Act and National Environmental Policy Act, 2) that the decision to approve the American Smelting and Refining Company's drilling project was not arbitrary and capricious, 3) that the relevant considerations were before the Forest Service and the Fish and Wildlife Service and were properly taken into account, and 4) that the Forest Service decision must be upheld.

In the summer of 1980, the Colorado Natural Areas Program (CNAP) conducted field work, under contract to the Service, on 25 Colorado plant species. Status reports are now being written. CNAP is recommending that one of the plants be listed as Endangered, four listed as Threatened, and no action be taken now on the other 20 species because they are either 1) not separate taxonomic entities, 2) more widespread than presumed, or 3) in need of more study.

Region 7. On May 1-10 a field survey of Agattu and Amchitka Islands in the Aleutians will be conducted. Surveyors will search for returning Aleutian Canada geese (*Branta canadensis leucopareia*) which were released in past years to establish nesting colonies.

The Endangered Cui-ui—Up the River to Recovery

by G. Gary Scopettone for the National Fishery Research Laboratory, Seattle, Washington. Mr. Scopettone is a Fishery Management Biologist at the Fisheries Assistance Office, Reno, Nevada.

Historically, springtime marked the annual migration of the cui-ui (*Chasmistes cujus*) from Pyramid Lake, Nevada, upstream into the lower Truckee River to spawn. For centuries this event attracted the neighboring Paiute Indians from miles around, who came to harvest cui-ui (most commonly pronounced "kwee-wee") which they regarded highly as food. In recent years, however, spawning runs of the Endangered fish became precariously low, bringing an end to this native American tradition. In 1969, the Paiute Indians ceased all harvest of the cui-ui, and now the Pyramid Lake species is protected under the Endangered Species Act of 1973.

Imperilment of the cui-ui resulted primarily from Derby Dam and the Newlands Project, one of the earliest (1905) Federal land reclamation efforts. Derby Dam, which was constructed 40 miles upstream from the mouth of the Truckee River, caused the diversion of water down a transbasinal canal (Truckee Canal) into the Carson Basin and, thence, to agricultural lands. The resulting enormous annual drawoff caused Pyramid Lake to subside, and an extensive delta to form at the mouth of the Truckee River. Water levels decreased until, except in occasional years with abnormally high spring runoff, adult fish were unable to traverse the shallow delta to the Truckee River.

The drought of the 1930's had an additional detrimental impact on Pyramid Lake fish species. During that decade, both the cui-ui and the Pyramid Lake Lahontan cutthroat trout (*Salmo clarki henshawi*) were denied access to the Truckee River. The cui-ui, because of its longevity (they have been aged to 18 years) and ability to reproduce successfully in the few fresh water interfaces of saline Pyramid Lake, was able to maintain at least a marginal population. The Pyramid Lake strain of cutthroat trout, however, became extinct.

To insure the survival of the cui-ui, the Pyramid Lake Paiutes and the U.S. Fish and Wildlife Service together initiated a program at Dunn Hatchery on the Paiute Indian Reservation to artificially propagate cui-ui. Fish reared at Dunn Hatchery have been periodically released into the lower Truckee River since shortly after the program began in 1973. Since 1977, the cui-ui hatchery



Adult cui-ui being gathered at the Marble Bluff Fish Handling Facility for release in the lower Truckee River.

program has been operated independently by the Pyramid Lake Tribe.

In 1976, the Bureau of Reclamation (now the Water and Power Resources Service) completed a 3-mile long fishway, which includes four fish ladders, along the Truckee River to again permit cui-ui spawner access to the river. The ladders were easily traversed by (stocked) Lahontan cutthroat trout, but water velocities proved too great for the lesser swimming ability of the cui-ui. No cui-ui used the fishway for the first two years of its operation. (The Service handles the fishway operations.)

In 1978, one ladder was partially modified to reduce water velocity; as a result, 33 cui-ui traversed the entire fishway and were captured upstream in the Marble Bluff Fish Handling Facility. In 1979, the same ladder was further modified, and 146 smaller cui-ui traversed the entire fishway. These fish, plus an additional 149 spawners collected in the fishway canal, were released in the lower Truckee River to spawn. A second ladder was modified for the 1980 cui-ui run, and the results were again gratifying; nearly 5,000 spawners were collected at Marble Bluff. These fish along with the additional 1,114 spawners were released in the lower Truckee. Recently, the remaining two ladders have been modified, and even larger releases of cui-ui into the lower Truckee River are anticipated for the 1981 season. It appears now that cui-ui are "up the river to recovery."

To help insure the recovery of the species, the Service has developed the Cui-ui Recovery Plan which has as its primary objective to restore the species to a nonendangered status and reclassify it from Endangered to Threatened. Biologists from the Nevada Department of Wildlife, the University of Michigan, and the Pyramid Lake Paiute Indian Tribe assisted in the development of the plan.

Information called for in the plan is being researched jointly by the Service's National Fishery Research Laboratory in Seattle, Washington, and the Fisheries Assistance Office in Reno, Nevada. As directed by the plan guidelines, these two Service groups intend to study the Truckee River life history phase of the cui-ui, document natural reproduction in the greatly man-altered lower Truckee River, and then develop the baseline information needed to maximize recruitment of cui-ui to Pyramid Lake. Determining flow requirements for optimal fish passage, spawning, incubation, and nursery habitat are integral to the study, and are emphasized in the recovery plan.

This team approach between research and operations should help assure that this unique species will recover sufficiently to allow reclassification and restoration of the cherished cui-ui fishery.

Rulemaking Actions

April 1981

PROPOSAL RECOGNIZES STATEWIDE RECOVERY OF LOUISIANA ALLIGATORS

New studies support a recent Service proposal to change the legal status of the American alligator (*Alligator mississippiensis*) in 52 parishes in Louisiana (F.R. 5/1/81). If finalized, alligators affected by the proposal would be reclassified from Endangered or Threatened status under the Endangered Species Act of 1973 to Threatened under the Similarity of Appearance provision of the Act. Alligators in the remaining 12 Louisiana parishes are already classified under the less restrictive Similarity of Appearance status.

Effective law enforcement by the State of Louisiana and the Service helped curtail taking, enabling the alligator to recover from former low numbers and regain biological stability in the State. Reclassification of alligators in the 52 Louisiana parishes, as proposed, would be a formal recognition by the Service of the species' recovery and would make available to the State an option to institute alligator harvests on a statewide basis, in accordance with the Service's special rule on Threatened alligators and existing State laws.

Because of similarity of appearance with other alligators which occur in varying densities in wetland habitats in other States (including Alabama, Arkansas, Florida, Georgia, Mississippi, North Carolina, Oklahoma, South Carolina, and Texas), it would still be necessary to impose some restrictions on commercial activities involving species taken in Louisiana. These provisions would insure the conservation of other alligator populations as well as other crocodilians that are Endangered or Threatened.

Recovery and Review

The alligator was first classified as Endangered throughout its range in 1967, due to a reduction in numbers from hunting and poaching. Subsequently, as the alligator recovered in certain parts of its range, the Service effected the follow-

ing reclassifications: (1) Reclassification to Threatened by Similarity of Appearance in three coastal parishes of Louisiana, reflecting complete recovery (F.R. 9/26/75); (2) Reclassification to Threatened, reflecting partial recovery in all of Florida and certain coastal areas in South Carolina, Georgia, Louisiana, and Texas (F.R. 1/10/77); and (3) Reclassification to Threatened by Similarity of Appearance, again reflecting complete recovery of nine additional parishes of Louisiana (F.R. 6/25/79). Subsequent to the most recent reclassification, the Service has sponsored further review of the status of the alligator in Louisiana.

In June 1979, the Service contracted with Dr. R. H. Chabreck of Louisiana State University to compile a status review of existing scientific and commercial data on the alligator in Louisiana. Chabreck's report recommends statewide reclassification of the species in view of current protection, number of alligators, and an abundance of alligator habitat.

In June 1980, the Service began working with Mr. Duane Taylor, wildlife biologist with the Louisiana Department of Wildlife and Fisheries, who has prepared two separate scientifically based reports analyzing alligator populations in non-marsh habitats. Taylor's 1980 report, which concentrated on the central and northern portion of the State, provides evidence that the Louisiana alligator population is stable, being limited by the support capability of the habitat, and that no further significant increase in alligator numbers can be expected.

Effects of Proposal

Reclassification of all alligators in Louisiana to Threatened by Similarity of Appearance would remove Federal agency responsibilities under Section 7 of the Act. The proposed action, however, would not be irreversible since relisting of the species would be possible

should the State substantially change existing management programs or if other changes occur which result in new threats to the species' recovery.

If the State elects, alligator harvest programs, increasing at a level commensurate with controlled expanded management plans, would likely increase the volume of alligator exports. Exports will continue to be restricted by the requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The Service will continue to review the possible impact of alligator exports on other endangered crocodilians in international trade and take appropriate action if evidence indicates restrictions are warranted.

A minor boundary change in South Carolina proposed in the same rule to close a 2-mile gap near Walterboro, will have no significant effect since it would serve to formalize a 2-mile segment which the Service and the State already are informally using.

Comments and suggestions from interested parties concerning any aspect of these proposed rules should be submitted by June 30, 1981. Send comments to Area Manager, Jackson Area Office, U.S. Fish and Wildlife Service, 200 East Pasacagoula Street, Suite 300, Jackson, Mississippi 39201.

A public meeting on the proposed reclassification was conducted by the Service on May 28, 1981. Two sessions of the meeting will be held at the Colonnade Theater of the Louisiana State University Union Building in Baton Rouge, at 1:00 pm and 7:00 pm.

SERVICE ACCEPTS PETITION TO LIST MISSOURI FISH

On December 10, 1980, the Ozark Endangered Species Task Force presented the Service substantial evidence to support a petition to add the Niangua darter (*Etheostoma nianguae*) to the U.S. List of Endangered and Threatened Wildlife and Plants. After reviewing the petition and a supporting status report, the Service published formal acceptance of the document (F.R. 4/9/81).

A comprehensive report on the Niangua darter, submitted as the basis of the petition, was prepared by Dr. William L. Pliger of the Missouri Department of Conservation. It includes information on the distribution, status, and life history of the species, and also includes a thorough review of the literature on this species.

The species is rare, localized in occurrence, and vulnerable to extinction, being known only from the Osage River basin in west central Missouri. Based on

Continued on page 5

MISSOURI FISH

Continued from page 4

the information presently available, the Service believes that the species qualifies for Threatened status as defined by the Endangered Species Act of 1973.

The Service anticipates publishing within the next few months a proposal to list the Niangua darter as Threatened. Comments on the species' status, distribution, and Critical Habitat as well as information on potential environmental and economic impacts and effects on small entities are requested from all sources. Any data relevant to this notice of review should be sent, by July 6, 1981, to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240.

AFRICAN ELEPHANT REGS UNDER SERVICE CONSIDERATION

The Service sought public comment on certain changes in the "special rule" on the African elephant (*Loxodonta*

aficana) which would ease restrictions on domestic activities and bring the rule into harmony with the trade provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 4/9/81). The Service intends to publish a proposed rule on these modifications in the near future.

KANGAROO IMPORT

Continued from page 1

scribed forms which are subject to inspection.

New South Wales has conducted aerial surveys of its commercial zone in tour of the past five years to determine kangaroo population size and safe harvesting levels. Aerial surveys are being conducted on an annual basis.

South Australia has established an upper limit of 80,000 kangaroos which may be harvested, regardless of the numbers present. Commercial hunting of kangaroos is permitted in only 25 percent of the State. All animals taken for commercial purposes must bear a sealed tag issued by the fauna authority on payment of a royalty.

In Western Australia, all wild vertebrate fauna is protected until otherwise declared by the State's

Ministers for Fisheries and Wildlife. The goal of management in this State is the continuation of self-perpetuating populations of kangaroos throughout their preferred range. What hunting the State allows, for commercial or damage mitigation reasons, is strictly limited by the licensing of hunters and processors.

To coordinate the management programs of these four States, the Australian National Parks and Wildlife Service reviews all recommendations for harvest quotas from each State.

Current kangaroo population estimates for these States are as follows: Queensland, 25,000,000; South Australia, 1,400,000; New South Wales, 5,000,000; Western Australia, 1,125,000. These figures are based only on the adult population and only include numbers in commercial zones, in States which make such a designation. Therefore, the Service considers a total population estimate of 32 million to be very conservative. Australia established the nationwide kill quota for 1980 at 2.8 million kangaroos.

Public Comments

The proposal to lift this ban, which was published on June 16, 1980, drew a lot of opposition from conservation groups

Continued on page 6

KANGAROO IMPORT

Continued from page 5

and private individuals during the regular comment period (June 16 to July 16, 1980) and the reopened comment period (September 16 to October 16, 1980). One of the major legal points of the opposition was that allowing commercial importation was contrary to the protection granted to a Threatened species under the Endangered Species Act of 1973, as amended.

In its final ruling to lift the ban on commercial importation of kangaroos, and their parts and products, the Service responded that these kangaroos represent an unusual case where a species may at some time in the future be vulnerable because of potential threats, yet presently occurs in such numbers as to require control measures. The Service has found that the requirements of 50 CFR 17.40(a) have been met and that commercial import can be permitted. In addition, the Service is of the opinion that because of the current abundance of kangaroos and the potential indiscriminate use of poisons by ranchers to reduce their numbers, a regulated commercial harvest by licensed private hunters is the most acceptable way to control populations and avoid greater threats posed by other control methods.

Review Period

After 2 years, the Service will again review the entire situation and determine whether the importation ban should be reimposed. Unless the best available scientific and commercial data at that time suggests otherwise, commercial import of kangaroos, and their parts and products, will continue without a requirement for a permit from the United States for individual shipments.

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	2	0	1	5	0	0	8
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	48	2	0	7	1	2	60
TOTAL	189	43	445	45	7	23	752

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Pacific ridley sea turtle.

Number of species currently proposed: 18 animals
11 plants

Number of Critical Habitats listed: 48
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 41
Number of Cooperative Agreements signed with States:
38 fish & wildlife
10 plants

April 30, 1981

NEW PUBLICATIONS

Rare and Endangered Vascular Plant Species in New Jersey, published by the Conservation and Environmental Studies Center (a private conservation group) in cooperation with the Fish and Wildlife Service can be received free of charge by writing the U.S. Fish and Wildlife Service, Attention: Mr. Richard Dyer, Suite 700, One Gateway Center, Newton Corner, Massachusetts 02158.

The Service's Newton Corner regional

office also has for free distribution a limited quantity of the *Eastern Peregrine Falcon Recovery Plan*. Write the above address to request a copy.

Extinction: The Causes and Consequences of the Disappearance of Species, a new Random House publication by Paul and Anne Ehrlich, provides a clear, well-reasoned explanation for saving endangered species. *Extinction* is available in local book stores.

CRITICAL HABITAT UPDATE

The following table indicates all listed species for which Critical Habitat had been designated through May 31, 1981

Common Name	Scientific Name	C.H. Determined	Affected States (Areas)	Common Name	Scientific Name	C.H. Determined	Affected States (Areas)
Bat Indiana	<i>Myotis sodalis</i>	FR 9/24/76*	IL IN KY MO TN WV	Boa Mona	<i>Epicrates monensis monensis</i>	FR 2/3/78	PR
Bat Virginia big-eared	<i>Plecotus townsendi virginianus</i>	FR 11/30/79	WV	Cocoi golden	<i>Elaeutherodactylus jasperr</i>	FR 11/11/77	PR
Manatee Florida	<i>Trichechus manatus</i>	FR 9/24/76*	FL	Crocodile American	<i>Crocodylus aculus</i>	FR 9/24/76*	FL
Rat Morris Bay kangaroo	<i>Dipodomys heermanni morioensis</i>	FR 8/11/77	CA	Iguana Mona ground	<i>Cyclura stejnegeri</i>	FR 2/3/78	PR
Wolf gray	<i>Canis lupus</i>	FR 3/9/78	MI MN	Lizard Coachella Valley fringe-toed	<i>Uma inornata</i>	FR 9/25/80	CA
Blackbird yellow shouldered	<i>Agelaius phoeniceus</i>	FR 11/19/78	PR	Lizard St. Croix ground	<i>Ameiva ameiva</i>	FR 6/3/77*	Virgin Islands NM
Condor California	<i>Gymnogyps californianus</i>	FR 9/24/76*	CA	Rattlesnake New Mexican indigo nosed	<i>Crotalus willardi obscurus</i>	FR 8/4/78	TX
Cranr Mississippi sandhill	<i>Grus canadensis pulla</i>	FR 8/8/77	MS	Salamander San Marcos	<i>Eurycea nana</i>	FR 7/14/80	TX
Cranr whooping	<i>Grus americana</i>	FR 5/15/78	CO ID KS NL NM OK TX	Toad Houston	<i>Bufo houstonensis</i>	FR 1/31/78	TX
Falcon American peregrine	<i>Falco peregrinus anatum</i>	FR 8/11/77	CA	Tortoise desert	<i>Gopherus agassizii</i>	FR 8/20/80	UT
Kite Everglades	<i>Rostrhamus sociabilis</i>	FR 8/11/77	FL	Treellog Pine Barrens	<i>Hyla andersonii</i>	FR 11/11/77	FL
Palila	<i>Psittirostia baillii</i>	FR 8/11/77	HI	Turtle leatherback sea	<i>Onychochelys coriacea</i>	FR 9/26/78	Virgin Islands
Sparrow Cape sabbie	<i>Ammodramus maritima mirabilis</i>	FR 8/11/77	FL	Turtle leatherback sea	<i>Onychochelys coriacea</i>	FR 4/23/79***	Virgin Islands MA
Sparrow dusky seaside	<i>Ammodramus maritima nigrescens</i>	FR 8/11/77	FL	Turtle Plymouth ind-bellied	<i>Pseudemys rubriventris bangsi</i>	FR 4/2/80	CA
Cavfish Alabama	<i>Speoplatyrhinus poolei</i>	FR 9/9/77	AL	Beetle Delta green ground	<i>Elaphrus undis</i>	FR 8/8/80	CA
Chub slender	<i>Hybopsis cahnii</i>	FR 9/9/77	TN VA	Beetle Valley elderberry longhorn	<i>Desmocerius californicus dimorphus</i>	FR 8/8/80	CA
Chub spottin	<i>Hybopsis monacha</i>	FR 9/9/77	VA TN NC	Butterfly Oregon silver-spotted	<i>Speyeria zelena hippolyte</i>	FR 7/2/80	OR
Darter fountain	<i>Etheostoma fonticola</i>	FR 7/14/80	TX	Butterfly Palos Verde blue	<i>Glaucopsyche lygdamus palosverdeensis</i>	FR 7/2/80	CA
Darter leopard	<i>Percina pantherina</i>	FR 1/27/78	AK OK	Antioch Dunes even ng pumose	<i>Oenothera deltoides ssp howellii</i>	FR 8/31/78	CA
Darter slackwater	<i>Etheostoma boschungii</i>	FR 9/9/77	AL TN	Centia Costa wall flower	<i>Erysimum capitatum var angustatum</i>	FR 8/31/78	CA
Darter snail	<i>Pelocina lanasii</i>	FR 4/1/78*	TN	Gypsum wild buckwheat	<i>Eriogonum gypsophilum</i>	FR 1/19/81**	NV
Gambusia San Marcos	<i>Gambusia georgei</i>	FR 7/14/80	TX	Robbins cinquefoil	<i>Potentilla robbinsiana</i>	FR 9/17/80	NH
Madtom yellowfin	<i>Noturus flavipinnis</i>	FR 9/9/77	TN VA	Texas wild rice	<i>Zizania texana</i>	FR 7/14/80	TX
Pupfish Leon Springs	<i>Cyprinodon bairdii</i>	FR 8/15/80	TX	Texas poppy-mallow	<i>Callitriche scaberrimula</i>	FR 1/13/81**	TX
Trout little lein golden white	<i>Salmo gairdneri</i>	FR 4/13/78	CA	Todson penniloyal	<i>Hedeoma pinnatifidum</i>	FR 1/19/81**	NH
Anole giant	<i>Anolis roosevelti</i>	FR 7/21/77	PR				

EMERGENCY RULE EXPIRES

The emergency listing as Endangered with Critical Habitat for the Osgood Mountain milk vetch (*Astragalus voderwilliamsii*) expired on April 15, 1981. (See September 1980 BULLETIN for more information.) The service anticipates the publication of a new listing proposal for this species.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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RECOVERY PLANNING

Strategy Prepared for Plymouth Red-bellied Turtle

This is part 1 of a 2-part series on recovery planning. The Service has placed an increased emphasis on recovery and has prepared new guidelines for the development of recovery plans. Part 1, written by Mr. Roger Hogan of the Service's Region 5 office, describes the method of preparation used by the Regional Office in developing the Plymouth Red-bellied Turtle Recovery Plan.

Part 2 will be a discussion of the new guidelines and the new emphasis placed on recovery in the Endangered Species Program.

In 1869, Mr. Fred Lucas discovered the shell of a strange turtle at a place called Sparrow Hill in Plymouth, Massachusetts, a historic community located near Cape Cod. As it turned out, that shell belonged to a rare animal now known as the Plymouth red-bellied turtle (*Pseudemys* (= *Chrysemys*) *rubriventris bangsi*).

The Plymouth red-bellied turtle is found almost entirely in the Plymouth County, Massachusetts, area. Its designated Critical Habitat of 3,269 acres (F.R. 4/2/80) is near the town of Plymouth in pine barrens habitat, interspersed with small to moderate sized freshwater ponds. Population estimates for the turtle indicate that approximately 200 may exist. Based on evidence that the turtle's range once extended at least 50 miles further north to the Ipswich River in Essex County, Massachusetts, and south to Martha's Vineyard, Dukes County, Massachusetts, it has been con-

cluded that the red-belly was once more widespread in eastern Massachusetts.

The turtle's current Endangered status is due to its low numbers, restricted range, and vulnerability to the more obvious threats of harassment, poaching, shooting, and habitat modification or destruction. In view of this, it was determined that the most realistic initial objective of a recovery plan for the species should be to restore it to a point where it could be classified as Threatened instead of Endangered. Later recovery efforts were planned which ultimately would allow the species to be removed from protection.

Preparing the Recovery Plan

Once these objectives were set, the first step in writing the recovery plan for the Plymouth red-bellied turtle involved

an evaluation of the following questions:

1. What are the greatest threats facing the turtle and its habitat?

2. What do we know about the turtle, and what do we need to know in order to evolve a plan that would eventually have the potential for leading to a change of status (from Endangered to Threatened) for the species?

Consideration of the immediate threats to the turtle became of prime importance because a recovery plan has to deal with problems facing the species in priority order; the highest priority is placed on tasks which would prevent extinction. Therefore, we had to decide what to do in the early phases of the recovery activities to protect the existing turtles while we were learning more about the subtle elements essential to the species' long-term survival.

Habitat Protection

One recovery action that could be taken early was to protect an approximately 182-acre portion of the proposed Critical Habitat offered for sale by private landowners. The property, adjacent to Myles Standish State Forest, contained ponds that are largely un-

Continued on page 3



The Plymouth red-bellied turtle, a colorful animal with a dark, humped back, is also large, weighing up to 10 or 11 pounds. The plastron (bottom shell) is coral red or pink, accented with gray or black markings near the seams, while the dark green head and neck have yellow stripes. It is noted for its shyness, which makes it difficult to capture in its pond habitat.

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REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of May.

Region 1. Several hundred Borax Lake chubs (*Gila boraxobius*) were found dead around the fringes of Borax Lake in southeastern Oregon in late

April. This 10-acre hot springs lake is the only habitat of the newly described species. (The Borax Lake chub was listed as Endangered with Critical Habitat in an emergency rule on May 28, 1980. The fish was proposed for permanent protection on October 16, 1980). The cause of the die-off is unknown and

several thousand live fish remain in the lake. Samples of the dead fish were collected and are being analyzed to determine the cause of death.

The State of Oregon has successfully intervened in the only known active peregrine falcon (*Falco peregrinus anatum*) nest in the State. In cooperation with the falcon propagation facility at the University of California at Santa Cruz, two badly dehydrated eggs were removed from the nest and replaced by two chicks from the Santa Cruz facility. A third egg was beyond recovery. The chicks were well received by the adult pair, and the two eggs were placed in an incubator at Santa Cruz. Both eggs hatched in late May.

Region 2. The first captive bonytail chubs (*Gila elegans*) were produced at the Willow Beach National Fish Hatchery; 80,000 young survived. Of these, 30,000 were moved to the Dexter Fish Hatchery where they are reportedly doing well.

The highest number of young bald eagles (*Haliaeetus leucocephalus*) fledged in central Arizona occurred this spring. Eleven young eagles were observed in known eyries.

The highly Endangered Mexican wolf (*Canis lupus baileyi*) bred in captivity for the first time this spring at the Wild Canid Survival and Research Center in St. Louis. The only female in captivity produced a litter of four pups on May 20, 1981. Wildlife biologists were pleased that three of the pups were females. As a precaution, two of the pups were moved to the St. Louis Zoological Park which has special facilities and experienced personnel for hand-rearing the young animals. The other two are being cared for by the mother in an isolated den. It is hoped that these new females, along with the six males in captivity, will form the nucleus of a captive breeding program.

Region 3. The Technical Review Draft of the Northern Wild Monkshood (*Aconitum noveboracense*) Recovery Plan has been completed.

Region 4. The Tennessee Valley Authority (TVA), in coordination with the Service's Asheville Area Office, is currently working with a private firm regarding development of telemetry equipment for mussels. This is possibly the only such equipment ever developed for invertebrates. The device eventually selected will be implanted internally in the cavity between the shell and the mantle of the mussel. The device will hopefully last for several years and allow TVA to monitor the survival of transplanted mussels without hampering the success of the transplant due to disturbance from sampling. TVA's immediate objective is to establish new populations of two mussel species that would otherwise be jeopardized by the completion of the Columbia Dam Project.

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Region 4's publication, *Management Guidelines for the Bald Eagle in the Southeast Region*, has been completed, and preliminary copies have been mailed to selected State and Federal personnel for review and use as needed.

Region 5. The West Virginia report on rare and endangered plants has been submitted, completing a region-wide project. Copies will be available from the Regional Office in the future.

The Appalachian Mountain Club, U.S. Forest Service, and Fish and Wildlife Service have initiated an intensive conservation/education program in the White Mountains of New Hampshire to protect the Endangered Robbins' cinquefoil (*Potentilla robbinsiana*). The program began Memorial Day weekend and will continue through September 15, 1981.

Maine has reported the highest num-

ber of young bald eagles since records have been kept in the State. At least 45 young have been produced in Maine this year.

Based on the successes during a five-year bald eagle hacking program, the New York State Department of Environmental Conservation (DEC) has developed a second five-year plan. Approved by the Fish and Wildlife Service, the plan calls for 21 birds to be released at a single hacking site in 1981, and a total of 129 birds to be hacked through 1985.

During the last five years, 22 eagles were released resulting in two breeding pairs. Project personnel believe it is possible that up to 50 additional nesting pairs can be established during the next decade due to large numbers of released young and their increasing wild progeny.

The eaglets to be used in the project will be transported in mid-July from Alaska, where they are not listed as an Endangered species. The release is expected to occur in mid-August in the DEC's Oak Orchard Wildlife Management Area in Genesee County in western New York.

Region 6. On June 15, approximately 900 greenback cutthroat trout (*Salmo clarki stomias*) will be transferred from the Service's Fish Cultural Development Center, Bozeman, Montana, to Rocky Mountain National Park in Colorado. These are the first hatchery reared greenbacks to be released in the wild. They will be released in two areas within the historic range of the fish.

The Grizzly Bear (*Ursus arctos horribilis*) Recovery Plan has been submitted to the Service's Director for approval.

Recovery Planning

Continued from page 1

touched by development and have the potential to be used for restoration efforts. The property was purchased by the Nature Conservancy to be held until the Service can obtain it as part of the recovery process, as funds become available.

Dr. Terry Graham, who studied the species for the Service, was contacted for his assistance in writing the recovery plan, as was Brad Blodget, Assistant Director of Non-game and Endangered Species for the Massachusetts Division of Fisheries and Wildlife. Both agreed that habitat destruction, shooting, and harassment were problems that required early action, concurrent with gathering data on the species' distribution, life history, and habitat requirements.

Public Information Program

Because of his interactions with the residents of Plymouth County, Dr. Graham was acutely aware of the need for a public information program. This program would inform residents of the presence of the turtle, its sensitivity to harassment, the need for protecting the species and its habitat, and would encourage the reporting of turtle sightings. Residents were extremely helpful to Dr. Graham during his past studies, supplying valuable information on turtle habitats and sightings. Indications of the degree of interest in the turtle shown by some local residents included the appearance of a red-bellied turtle t-shirt and a red-bellied button worn by concerned students from an area school to promote additional protection for the turtle through State action. The public information program then became an important item in the recovery plan due to its potential for multiple benefits.

Additional field surveys to further define existing populations of the Plymouth turtle, and studies to supplement life history and habitat data were listed as tasks in the recovery process. Additional habitat preservation activities included the possible use of land easements to protect important habitat and possible fee acquisition should critical parcels of land become available.

Each activity or task was assigned a priority to allow the most vital to be accomplished early. These tasks and their priorities were then listed in the implementation schedule which is the primary "action portion" of the recovery plan.

Several drafts of the completed recovery plan were circulated to in-

terested parties and to the cooperating agency, the Massachusetts Division of Fisheries and Wildlife, for their biological and agency comments. The plan was modified based on their suggestions and comments and approved by the Service Director on March 26, 1981.

A recovery plan, it should be noted, is not a static document, but will continue to be modified as individual tasks are completed and as new needs become evident. It can only be considered to be a final document, in the true sense of the word, when the objectives of the plan have been reached, and the Plymouth red-bellied turtle and its habitat have been afforded the protection mandated under the Endangered Species Act.



Photo by Dr. Terry Graham

The Plymouth red-bellied turtle feeds primarily on aquatic vegetation and may wander considerable distances over land during the year. Much of the red-belly's habitat requirements and life history remain to be determined.

MICHIGAN'S ENDANGERED SPECIES PROGRAM



by Richard Block

Michigan's dynamic and multifaceted endangered species program is founded on a long history of protecting and preserving rare and endangered species. In the 1950's, the State's Department of Natural Resources (DNR) acquired habitat to protect the Kirtland's warbler and the prairie chicken, and passed legislative acts to protect the State's other important nongame species. In 1970, Michigan recognized the importance of protecting those species which were on the Federal lists of Endangered species by passing Public Act 210 (P.A. 210, 1970). The Act did not provide for the management and restoration of Endangered populations, but it did provide for their protection.

In September, 1974, Michigan enacted its "Endangered Species Act" (P.A. 203, 1974), a law designed to complement the Federal Endangered Species Act of 1973 and provide an effective base for a State program.

Michigan Program

The Endangered Species Program, charged with the administration of Michigan's Endangered Species Act, is within the Wildlife Division's "Nongame Unit" in the DNR. Although the program sounds as though it is buried away under a hierarchy of bureaucratic departments, the Michigan program exercises a dynamic approach, reaching all Divisions of the DNR, other State and Federal agencies, and the private sector.

Dr. Sylvia Taylor, the Endangered Species Coordinator, heads the multifaceted State program. Assisted by Mr. John Lerg, Dr. Taylor works with such State Divisions as Waterways, Environmental Enforcement, Land Resource Programs, Law Enforcement, Forest Management, Parks, Water Quality, and Administrative Services which all have incorporated some aspect of the program.

The Land Resource Program's Natural Features Inventory, initiated under Michigan's Wilderness and Natural Areas Act, collects and stores much useful data on endangered and threatened species. The inventory, funded by the DNR and the Nature Conservancy, is

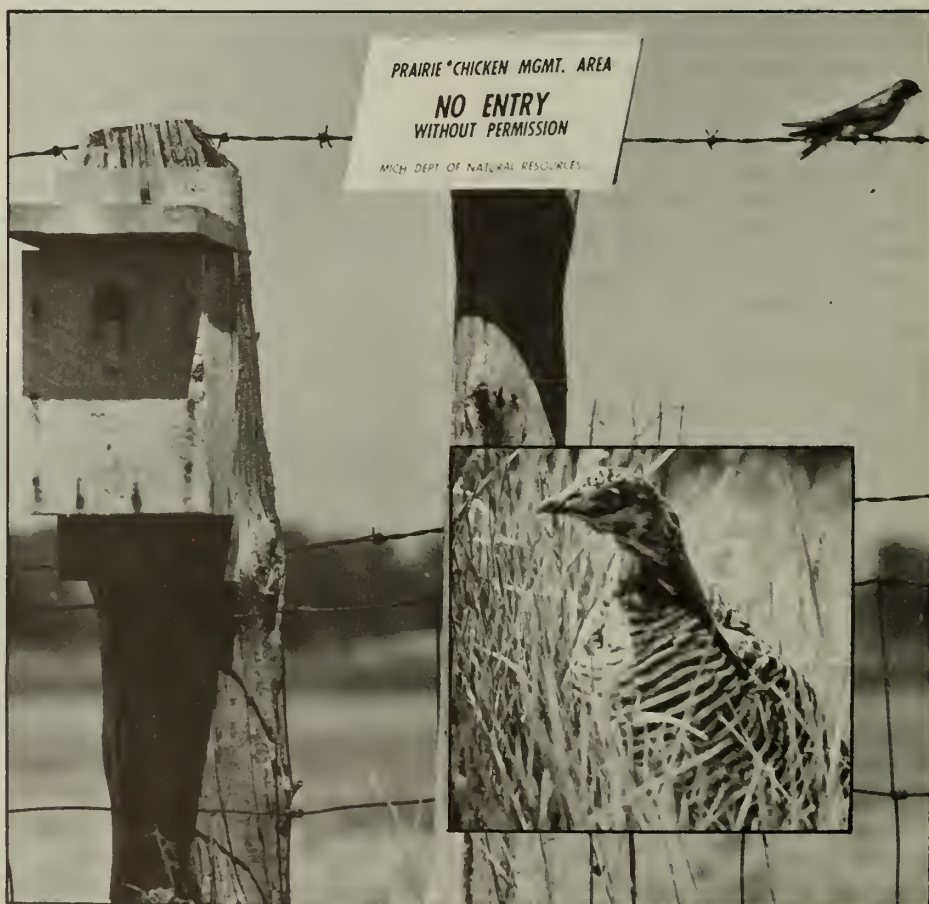
evaluating areas within Michigan for future preservation. Dr. Taylor and Mr. Lerg work closely with the inventory staff in identifying important habitats recorded in the survey.

The first State lists of endangered and threatened species, authorized by the 1974 act, were put together by committees of specialists in the areas of fishes, amphibians and reptiles, invertebrates, birds, mammals, and plants. These technical committees proposed species for possible inclusion on the State lists according to the definitions of the 1974 act. The species proposed were then open to citizen and Departmental comment, before being sent to the Natural Resources Commission. Now, one of the major activities of the program is the biennial review of these State lists.

Crossing State Boundaries

Dr. Taylor and Mr. Lerg must also coordinate activities which extend beyond Michigan. The endangered species staffs in Wisconsin, Minnesota, Illinois, and Ontario, Canada, regularly exchange information and discuss management plans for species whose ranges intersect the western Great Lakes region. Employees of Michigan's DNR serve on the recovery teams for the Kirtland's warbler and eastern timber wolf. The Michigan program is also implementing recommendations from the recovery plans for the bald eagle, Indiana bat, and peregrine falcon.

Federal aid in wildlife restoration projects funded and coordinated through the State Endangered Species Program



A State listed species, the greater prairie chicken numbers less than 25 individuals in Michigan. Management efforts on behalf of the greater prairie chicken include restricting public access to habitat to minimize disturbance.

have included both federally listed species and State listed species. The Kirtland's warbler (see BULLETIN, April 1981), bald eagle, eastern timber wolf, Indiana bat, and peregrine falcon have all received funding under the cooperative agreement signed in June 1976 by Michigan and the U.S. Fish and Wildlife Service.

Osprey/Bald Eagle Research

Osprey (*Pandion haliaetus*) research and management has benefited from the annual eagle surveys. Because of the osprey's similar food habits and habitat utilization, osprey surveys have been included with eagle surveys. Bald eagle (*Haliaeetus leucocephalus*) nesting surveys have been conducted annually since 1961, and the osprey survey has been underway since 1965.

In the past year, surveys of both bald eagles and osprey were completed during the spring and summer to determine reproductive success of the birds. A winter survey of bald eagles was also conducted to determine the wintering population within Michigan.

Aircraft, flying 300 to 400 feet above the ground, were used to conduct the nesting survey. Ground checks were made to supplement the aerial survey which had located pairs on active nests. Later in the nesting season, a second aerial survey was conducted to determine the number of young produced in each nest. In all, 83 active nests were identified in Michigan in 1980. Fifty-two pairs of eagles successfully bred and raised a total of 80 young for an average of 0.99 young produced per occupied nest. The 1980 figures are a near perfect match to the encouraging 1979 survey results.

The osprey survey results are equally



Iris lacustris (dwarf lake iris) is listed as a threatened species in the State of Michigan. It grows in alkaline gravel or sand exclusively along the northern shores of Lakes Michigan and Huron. The species occurs only in Michigan, Wisconsin, and Ontario, with the majority of its range along Michigan's coastlines. The plants are only 3-4 inches tall when in flower.

as favorable as the eagle survey results. In all, 117 active nests were identified in 1980 with 50 pairs breeding successfully. The successful pairs raised 104 young, a slight decline over the 1979 survey results. As a whole, Michigan's osprey population continues to expand. New pairs continue to appear and occupy new natural nest sites as well as man-made platforms. Annual fluctuations in reproductive success probably result from varying weather conditions.

Timber Wolf Research

Research and survey work on the eastern timber wolf (*Canis lupus*) is carried out on Isle Royale and Michigan's Upper Peninsula. In 1980, the 22nd year of research on the Isle Royale wolves, a record high 50 wolves was reported. During the winter of 1980-81, however, the wolf population fell by 40 percent. This decline came roughly a decade after a major drop in the island's moose population, which had numbered over 1,100 animals. The 1980 census indicated that there were 650 to 700 moose on the island. The dynamics of the predator-prey relationship between the wolves and moose has been the focal point of the years of study and has contributed much to the understanding of the ecology of the wolf. Additional funding for the important research on Isle Royale comes from the National Park Service, the Wildlife Management Institute, the American Petroleum Institute, other foundations, organizations, and individuals.

Peregrine Falcon Survey

Despite timing problems in funding, a historical survey of American peregrine falcon (*Falco peregrinus anatum*) eyries was completed in the Upper Peninsula. Kent Christopher, a graduate student at Michigan Technological University, submitted the work as his Master's thesis (*A Survey of Peregrine Falcon Habitat in Upper Michigan with Emphasis on Reintroduction Potential*). There are records of 20 nestings at 13 different sites (eyries) in Michigan's Upper Peninsula, including an eyrie active in 1971. Historic eyries and potential sites were evaluated as a preliminary survey for possible reintroduction, an activity which would be coordinated through the American Peregrine Falcon Recovery Team (Eastern Population).

Indiana Bat Survey

The Indiana bat (*Myotis sodalis*) received some survey attention even though there were only two historical records of the bats in Michigan. Survey results produced evidence of at least one breeding colony and the collection of a surprising number of individuals

from many southern Michigan counties. These results, combined with an assessment of potential habitat, indicate that habitat for the Indiana bat is not a limiting factor in Michigan. The bats' main problems appear to lie in the wintering caves in more southerly States.

State Listed Species

These long-term research efforts on federally listed species have been going on in Michigan for many years, but several State listed species have also been receiving much attention. Farming practices which changed the nature of the prairies and forest fire control which allowed the expansion of forested areas, have almost caused the extinction of the greater prairie chicken (*Tympanuchus cupido*) in Michigan. Now reduced to a population of less than 25 individuals, these birds once flourished in the fire-swept native grasslands of the State. Remnant flocks are found in Illinois and Wisconsin, and the birds are still fairly common in some areas of the Great Plains.

Management efforts to date have included the purchase of 815 acres of land, working with share-croppers on methods of farming conducive to prairie chicken populations, and posting portions of habitat against public entry to minimize disturbance of the birds. Limited funding has been the greatest single barrier to the furtherance of a prairie chicken management program for Michigan. One thing which might be of benefit to the dwindling population is the gradual change from corn cropland to pastureland.

Pine Marten Reintroduction

Once common, the pine marten (*Martes americana*) was thought to be locally extinct by 1929. In 1980, 38 pine martens were released into the Upper Peninsula, the third such attempt to reintroduce this species to a portion of its former range. The previous two releases met with questionable success because, although there have been sightings of pine martens, the population density appears to be too low for breeding and relatively few females were released.

Plant Program

Michigan has 16 endangered and 197 threatened native plants on its State list of protected species. American ginseng (*Panax quinquefolius*), which is controlled in trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora, is a State threatened species. The small whorled pogonia (*Isotria medeoloides*), currently proposed for Federal Endangered status, is listed as a State endan-

Continued on page 6

Continued from page 5

gered plant. Most of the State's protected plants are confined to very small areas which occur in four major community types: (1) Great Lakes beach communities; (2) wetland communities; (3) wet prairie communities; and (4) dry prairie communities.

The State is currently conducting an extensive survey which includes a study of herbaria records, visits to recorded habitat sites, and checks on other existing type habitats for possible previously unknown plant occurrence. This work will be completed by October 1981.

The Michigan Nature Association (MNA) has been quite active in land acquisition efforts, having acquired many small parcels of land throughout the State which contain State listed species. In 1979, the MNA purchased an area in Berrien County which contains the only known site in Michigan of the small whorled pogonia. This acquisition was made solely to protect *Isotria medeoloides*; other lands, acquired by the State for various purposes, also contain State endangered plants.

Program Funding/Cooperation Needed

The biggest cloud shadowing Michigan's Endangered Species Program is funding. Even though many of the different Division activities related to endangered and threatened species have been incorporated into the normal division operations, the completion of specific management plans, research, and habitat acquisition hang on the balance.

A tax check-off system was defeated in the State Legislature in 1980, but it may once again make it to the floor for a vote and prove to be a significant contributor to easing fiscal restraints. Since the tax return check-off system would provide taxpayers with the option of donating a portion of their tax return to nongame wildlife programs, endangered and threatened plants and animals would benefit by it.

As the DNR tightens its belt, the contributions and efforts of private organizations and individuals will play an increasingly important role. After all, it has been this combination of State and private organization activities and commitment which has made Michigan's program so dynamic.

The author of the Michigan State Report, Mr. Richard Block, is the Associate Director of the Integrative Studies Center of the School of Natural Resources at the University of Michigan, Ann Arbor. Mr. Block has designed and taught several classes on endangered species and has also lectured quite widely on the topic.

COURT UPHOLDS KANGAROO IMPORTS

On May 28, 1981, a Federal judge upheld the Service's lifting of the ban on kangaroo imports, which become effective on May 29 (F.R. 4/29/81). In *Defenders of Wildlife, Inc. v. James G. Watt, et al.*, United States District Judge Aubrey E. Robinson, Jr. stated that, "Because lifting the import ban was essential in order to encourage the Australian States to implement measures deemed necessary by defendants (Service), and because those measures were in fact adopted by the States, those measures in conjunction with the lifting of the ban must be viewed together. As such, the lifting of the ban fulfilled the conservation objectives of the Endangered Species Act."

Defenders of Wildlife, Inc. contended that the lifting of the import ban is equivalent to an unregulated taking and a violation of the Endangered Species Act. An appeal has been filed by Defenders, however, pending any appellate court order to the contrary, imports of kangaroos and their parts or products into the U.S. are now allowed.

CITES NEWS

May 1981

The Service's Office of the Scientific Authority (OSA)—replacing the Endangered Species Scientific Authority (ESSA)—functions as staff to the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). OSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

OSA To Develop 1981-82 Export Findings

The Service announced its intention to develop findings on export of bobcat, lynx, river otter, Alaskan gray wolf, Alaskan brown bear, American alligator, and American ginseng taken in the 1981-82 season (F.R. May 26, 1981).

Rulemaking Actions

May 1981

SERVICE REVIEWS 77 BIRDS

The Service has accepted a petition from the International Council for Bird Preservation, U.S. Section, Inc., to list 77 birds as Endangered or Threatened species (F.R. 5/12/81). Additional data are required before the Service can consider proposals to list any of these species.

The Service is seeking the most recent data on the status of any of these species and the degree and types of threats to their continued existence. Also, the Service is requesting information on environmental and economic impacts and effects of small entities that would result from listing these birds, and information on possible alternatives to the listing of any of these species.

Information should be submitted by September 9, 1981, to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240.

The 77 species, 19 native (including Pacific Trust Territories) and 58 foreign, are listed in the table below along with their approximate historic distribution.

Findings that trade will not be detrimental to these species (all on Appendix II of the Convention) must be made in order to allow export.

A notice of proposed findings on the export of American alligator and American ginseng is planned for publication in the June 26, 1981, *Federal Register*. A notice of proposed findings on the export of furbearing species (bobcat, lynx, river otter, Alaskan gray wolf, and Alaskan brown bear) is planned for the July 20, 1981, *Federal Register*. Com-

Continued on page 8

SERVICE TO PUBLISH REVISED CITES LISTS

Revised appendices to the CITES will be published in the *Federal Register* in early July. This revision will include the amendments to the species lists which were adopted by the CITES Parties at the New Delhi meeting in March 1981.

Common Name	Scientific Name	Historic Range
NATIVE BIRDS		
Tule white-fronted goose	<i>Anser albifrons elgasi</i>	Alaska, California
Puerto Rican sharp-shinned hawk	<i>Accipiter striatus venator</i>	Puerto Rico
Puerto Rican screech owl	<i>Buteo playpterus brunnescens</i>	Puerto Rico
Marianas gallinule	<i>Gallinula chloropus guami</i>	Mariana Islands
Guam rail	<i>Rallus oustoni</i>	Guam, Mariana Islands
Palau Nicobar pigeon	<i>Caloenas nicobarica pelewensis</i>	Pacific Trust Territories, Palau Island group
Radak Micronesian pigeon	<i>Ducula ocaenica ratakensis</i>	Marshall Islands
Truk Micronesian pigeon	<i>Ducula oceanica teraoki</i>	Caroline Islands
Marianas fruit dove	<i>Ptilinopus roseicapillus</i>	Mariana Islands
Ponape short-eared owl	<i>Asio flameus ponapensis</i>	Ponape, Caroline Islands
Virgin Islands screech owl	<i>Otus nudipes newtoni</i>	St. Croix, St. Thomas, St. Johns, Vieques Islands
*Guam Micronesian kingfisher	<i>Halcyon cinnomomina cinnomomina</i>	Guam, Mariana Islands
Truk monarch	<i>Metabolus rugensis</i>	Truk group, Caroline Islands
Rota bridled white-eye	<i>Zosterops conspicillata rotensis</i>	Rota, Mariana Islands
Truk greater white-eye	<i>Rukia ruki</i>	Tol, Truk Islands
Amak song sparrow	<i>Melospiza melodia amaka</i>	Amak Island, Aleutians
Palau blue-faced parrotfinch	<i>Erythrura trichroa pelewensis</i>	Palau group
Palau white-breasted woodswallow	<i>Artamus leucorhynchus pelewensis</i>	Palau group
*Marianas crow	<i>Corvus kubaryi</i>	Guam, Rota
FOREIGN BIRDS		
Colombian grebe	<i>Podiceps andinus</i>	Colombia
Black petrel	<i>Procellaria parkinsoni</i>	New Zealand
Reunion petrel	<i>Pterodroma aterrima</i>	Reunion Island, Indian Ocean
New Zealand Cook's petrel	<i>Pterodroma cookii cookii</i>	New Zealand
Chatham Island petrel	<i>Pterodroma hypoleuca axillaris</i>	Chatham Islands
Magenta petrel	<i>Pterodroma magentae</i>	Chatham Island
Galapagos dark-rumped petrel	<i>Pterodroma phaeopygia</i>	Galapagos Islands
Hermit ibis	<i>Geronticus eremita</i>	eastern Europe to central Africa
Madagascar serpent eagle	<i>Eutriorchis astur</i>	Madagascar
Madagascar sea eagle	<i>Haliaeetus vociferoides</i>	Madagascar
Utila chachalaca	<i>Ortalis vetula deschauensei</i>	Honduras
White-winged guan	<i>Penelope albipennis</i>	Peru
Cauca guan	<i>Penelope perspicax</i>	Colombia
Cantabrian capercaillie	<i>Tetrao urogallus cantabricus</i>	Spain, Portugal
Cheer pheasant	<i>Catreus wallichii</i>	Pakistan to Nepal
Gorgeted wood-quail	<i>Odontophorus strophium</i>	Colombia
Italian grey partridge	<i>Perdix perdix italica</i>	Italy
Takahe (rail)	<i>Notornis mantelli</i>	New Zealand
Barred-wing rail	<i>Rallus poecilopterus</i>	Fiji
Chatham Island oystercatcher	<i>Haematopus chathamensis</i>	Chatham Islands
Canarian black oystercatcher	<i>Haematopus moquini meadewaldoi</i>	Canary Islands
Black stilt	<i>Himantopus novaezelandiae</i>	New Zealand
Laurel pigeon	<i>Columba junoniae</i>	Canary Islands
Marquesas pigeon	<i>Ducula galeata</i>	Marquesas Islands
Pink pigeon	<i>Nesoenas mayeri</i>	Mauritius
Seychelles turtle dove	<i>Streptopelia picturata rostrata</i>	Seychelles Islands
Red-tailed parrot	<i>Amazona brasiliensis</i>	Brazil
Seychelles lesser vasa parrot	<i>Coracopsis nigra barklyi</i>	Seychelles Islands
Orange-fronted parakeet	<i>Cyanoramphus malherbi</i>	New Zealand
Norfolk Island parakeet	<i>Cyanoramphus novaezelandiae cookii</i>	Norfolk Island
Uvea horned parakeet	<i>Eunymphicus cornutus uvaeensis</i>	Loyalty Islands
Southeastern rufous-vented ground cuckoo	<i>Neomorphus geoffroyi dulcis</i>	Brazil
Soumagne's owl	<i>Tybo soumagnei</i>	Madagascar
Lanyu scops owl	<i>Otus elegans botelensis</i>	Taiwan
Chilean woodstar	<i>Eulidia yarrellii</i>	Chile
Klaben farm long-tailed hermit	<i>Phaethornis margarettae</i>	Brazil
Black barthroa (hummingbird)	<i>Threnetes grizeki</i>	Brazil
Okinawa woodpecker	<i>Sapheopipo noguchii</i>	Okinawa
Black-headed antwren	<i>Myrmotherula erythronotos</i>	Brazil
Fringe-backed fire-eye (antbird)	<i>Pyriglena atra</i>	Brazil
Black-capped bush shrike	<i>Malaconotus alius</i>	Tanzania
Van Dam's vanga	<i>Xenopirostris damii</i>	Madagascar
Pollen's vanga	<i>Xenopirostris polleni</i>	Madagascar
St. Lucia forest thrush	<i>Cichlherminia lherminieri santaeluciaae</i>	St. Lucia
Southern Ryukyu robin	<i>Eriothacus komadori subrufa</i>	Ryukyu Islands
Dappled mountain-robin	<i>Modulatrix o. orostruthus and M. o. amani</i>	Mozambique, Tanzania
Grey-headed blackbird	<i>Turdus poliocephalus poliocephalus</i>	Norfolk Island
Eiao Polynesian warbler	<i>Acrocephalus caffer aquilonis</i>	Eiao, Marguesas Islands
Moorea Polynesian warbler	<i>Acrocephalus caffer longirostris</i>	Society Islands
Long-legged warbler	<i>Trichocinchla rufa</i>	Fiji
Codfish Island fernbird	<i>Bowdleria punctata wilsoni</i>	New Zealand
Uapou flycatcher	<i>Pomarea mendozae mira</i>	Marguesas Islands
Kabylan nuthatch	<i>Sitta ledanti</i>	Algeria
Gizo white-eye	<i>Zosterops luteirostris luteirostris</i>	Solomon Islands
Cherry-throated tanager	<i>Nemosia rourei</i>	Brazil
Rodrigues fody	<i>Foudia flavicans</i>	Mascarene Islands
Mauritius fody	<i>Foudia rubra</i>	Mauritius
Lord Howe currawong	<i>Stephanomaria graculina crissalis</i>	Lord Howe Island

* Data in this petition for these five birds are considered as comments to an earlier notice (F.R. 5/18/79).

Export Findings

Continued from page 6

ments on both sets of proposed findings will be solicited by the Service.

OSA Criteria Challenged

The criteria used by OSA in advising whether export will not be detrimental to the survival of the species (summarized in F.R. July 10, 1980) were challenged by the Defenders of Wildlife, Inc. with regard to bobcat exports resulting from the 1979-80 harvest season. On February 3, 1981, the United States Court of Appeals for the District of Columbia Circuit held that the findings set forth by OSA are invalid and are set aside to the extent that they are not based on reliable estimates of the bobcat population and data showing the total number of bobcats to be killed in each of the States involved.

The Service finds the courts requirements to be a departure from wildlife management as it has traditionally been practiced in almost all States. Such requirements have not been used in managing elusive widespread species such as the bobcat, which are very difficult to census. The Service believes that findings based solely on the court's requirements would not be meaningful and that it is important to consider certain other types of information that the Service has sought in the past.

The court gave "the Scientific Authority considerable discretion to determine the method by which that estimate may be made and in evaluating its reliability." Accordingly, the Service intends to allow States the greatest possible latitude in selecting methods of estimating their bobcat population, to the

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	2	0	1	5	0	0	8
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	48	2	0	7	1	2	60
TOTAL	189	43	445	45	7	23	752

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 18 animals
11 plants

Number of Critical Habitats listed: 48

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 41

Number of Cooperative Agreements signed with States:

38 fish & wildlife

10 plants

May 31, 1981

extent that they are able to make such estimates.

The Service regards the court's second requirement (information regarding the total number of animals to be harvested in a particular season) to be very similar to one of OSA's previous minimum requirements for a management program, which is that States must determine their harvest level objective annually. Additionally each State will be asked to submit an estimate of its current total bobcat population, to the extent it is able to make such an estimate.

The intervenors have asked the

Supreme Court to review the decision. However, because resolution of this legal issue might not be reached before the next bobcat harvest season, the Service has initiated interim measures to attempt to meet the court's requirements.

Although the court's decision concerns only bobcats, OSA findings on lynx, river otter and American alligator could also be subject to legal challenges if they do not meet the court's requirements. Therefore, the Service has requested that each State submit the same types of information on these species as for bobcat.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

FLORIDA PANTHER POPULATION STUDIED

By Anne E. Shapiro
Endangered Species Biologist
Florida Game and Fresh Water
Fish Commission

Florida panther (*Felis concolor coryi*) investigations conducted by the Florida Game and Fresh Water Fish Commission since 1976 have confirmed the presence of at least one population of this subspecies in the Big Cypress/Everglades region. Perhaps only 20 Florida panthers remain, and probably all occur in this part of south Florida.

Initial State efforts included the establishment of a Florida Panther Record Clearing House, investigations into panther sightings and reports, and field searches. In 1980, the Commission proposed a pilot study to capture, radio-instrument, and monitor the movements of two panthers from the south Florida population in order to learn something about habitat preferences, home range sizes, and daily and seasonal activities. The proposal, based on the U.S. Fish and Wildlife Service's Florida Panther Recovery Team recommendations, was approved and is currently being supported, in part, by Federal funds made available through Section 6 of the Endangered Species Act of 1973.

In preparation for the eventual capture/instrumenting operation, a rigorous review of all research done on other subspecies of *Felis concolor* was conducted, and a capture and handling plan for the Florida subspecies was subsequently formulated. Dogs were chosen as the most efficient and practical means of capturing the cats, so the Commission employed the services of



Roy McBride, a professional mountain lion hunter from Texas. Mr. McBride brought along his six well-trained and highly specialized "cat dogs."

On February 10, 1981, a male Florida

panther was treed by the dogs in the Fakahatchee Strand, Collier County, tranquilized and equipped with a radio-collar. A second cat, also a male, was similarly captured in this same area on February 20. Both panthers are estimated to be between 10 and 12 years of age.

Preliminary monitoring indicates that one panther is ranging over approximately 45 square miles and the other cat over an area in excess of 75 square miles. Both animals will be monitored over the next year to analyze movements relative to various habitat types, prey species occurrence, and other factors. Next January, the two cats will be recaptured and the lithium batteries in their radio-collars will be replaced so that monitoring can continue. If all goes well, and funding and manpower levels permit, up to 10 additional adult panthers

Continued on page 3

RECOVERY PLANNING—Part II

RECOVERY GUIDELINES ESTABLISHED

By Peter G. Poulos

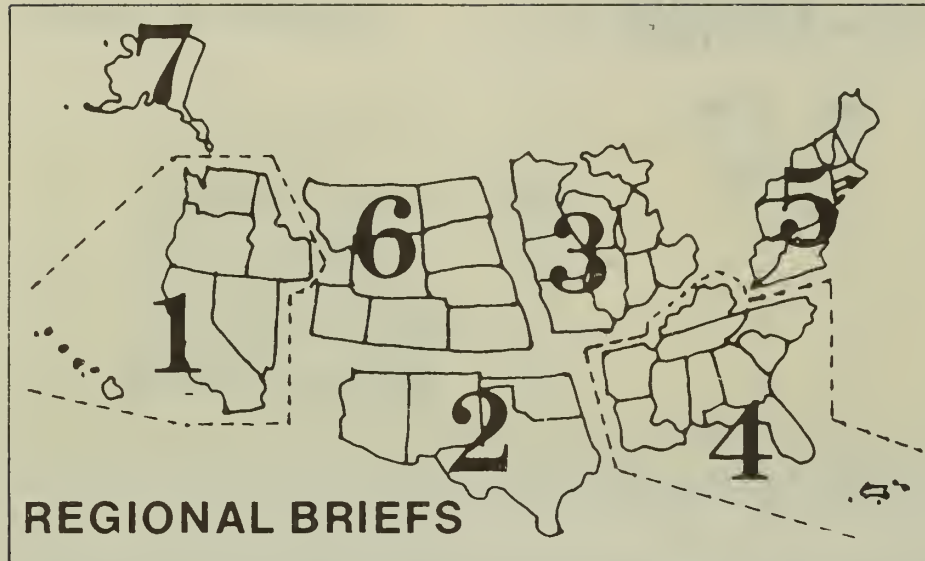
Increased emphasis on the recovery aspects of the Endangered Species Program has resulted in newly revised Recovery Planning Guidelines which were approved on April 21, 1981. These guidelines replace earlier ones which were approved in the Spring of 1979, in response to the Endangered Species Act Amendments of 1978 (see May 1979 BULLETIN).

Although recovery plan development

has been an important part of the Program since the enactment of the Endangered Species Act of 1973, recovery planning is specifically required by the 1978 amendments. Under the amendments, a recovery plan must be developed for every listed Endangered and Threatened species, except when the Secretary determines that "such a plan will not promote the conservation of the species."

The new guidelines, developed to bet-

Continued on page 4



Endangered Species Program regional staffers have reported the following activities for the month of June.

Region 1. The Boise Area Office and the Nevada Department of Wildlife have made arrangements to investigate the

status of the desert tortoise (*Gopherus agassizii*) in Nevada.

A progress report from Idaho State University reveals that the Shoshone sculpin (*Cottus greenei*), a native Idaho fish which was the subject of a Service

status review, was found at 17 of 29 sampling stations in the Hagerman Valley in southern Idaho. Continued work this summer will attempt to establish upstream and downstream edges of the species' distribution.

Work has begun on a joint effort to determine the status of four candidate plants in Nevada. The Air Force, Bureau of Land Management, and the Service have contributed funds for this project, conducted by seven botanists knowledgeable of Nevada flora.

Region 2. A previously undiscovered bald eagle (*Haliaeetus leucocephalus*) nest has been located in central Arizona. The nest, situated on a cliff overlooking a parking lot in a major recreational area, contains three fledglings.

The sea turtle sex determination research, conducted jointly by Rutgers University and the State University of New York at Buffalo, has been completed. A major finding was that incubation temperature has an effect on the gender of sea turtle hatchlings. Higher temperatures were found to produce more females.

Tropical depressions in the Gulf of Mexico have resulted in the loss of about 15 Kemp's Ridley sea turtle (*Lepidochelys kempii*) nests this season.

The red wolf (*Canis rufus*) captive breeding program in Tacoma, Washington, produced 6 litters totaling 25 pups this season, 9 males and 16 females. A pregnant female carrying nine pups died 10 days before whelping. Sue Behrns, the keeper, performed a Caesarean section on the dead female. Although there was no indication of a pulse or breathing in any of the pups, she was able to revive two of them. To date, 14 of the 25 born are still living.

Region 3. A scoping meeting for environmental assessment purposes on the Kirtland's Warbler Management Plan was held in Roscommon, Michigan.

The Eastern Timber Wolf Recovery Team met and determined what a viable population was and criteria for delisting. The team will offer its recommendations to the Service.

Region 4. The first injured manatees (*Trichechus manatus*) to be rehabilitated in captivity were returned to the wild in separate releases in April and June. The April release involved a cow that had injured a flipper after becoming entangled in a crab trap line, and also included her uninjured, but apparently dependent calf that had been kept with her in captivity. The two were held at Sea World of Florida during the rehabilitation period.

The June release involved a female that was rehabilitated at the Homosassa Springs tourist facility after being injured last year, presumably by a boat. Each release was made near the point of original capture.

The rehabilitation work at Sea World

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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was handled through a cooperative agreement which included limited Federal funding. At Homosassa Springs, however, the services were provided strictly as a matter of private interest in manatee conservation.

Region 5. A nesting pair of peregrine falcons (*Falco peregrinus anatum*) was discovered in the White Mountains of New Hampshire. The female is believed to be a bird that was hacked from a nearby site in 1978. Two young birds were also in the nest. They have been banded and are expected to fledge soon. This marks the first known nesting of peregrines in the eastern mountains since the birds disappeared in the 1950's.

A report on the Rare and Endangered Vascular Plants of West Virginia is available from the Newton Corner Regional Office. Also available, in limited

supply, are copies of the Delaware plant report.

Region 6. Black-footed ferret (*Mustela nigripes*) sighting reports started this year in May and have continued at a good pace into June. Reports have come in from Butte County, South Dakota; Uinta County, Wyoming; Goshen County, Wyoming; Moffat County, Colorado; and Lyman County, South Dakota. The sightings were classified as one confirmed, two probable, and two unconfirmed.

The Wood Buffalo-Aransas whooping crane (*Grus americana*) flock is monitored each spring and fall during migration. According to the Service's Pierre Area Office, which accumulates the sightings, 47 confirmed and probable sightings were made in the fall of 1980. Recorded observations of migrant whoopers began on September

9 in Canada and October 10 in the U.S. The last sighting was made on November 7. Sightings were reported from Saskatchewan (26), North Dakota (7), South Dakota (5), Nebraska (3), Kansas (2), and Oklahoma (4).

"Guidelines for Determining Grizzly Bear Nuisance Status and Controlling Nuisance Grizzly Bears in the Northern Continental Divide and Cabinet—Yaak Grizzly Bear Ecosystems" have been developed. A cooperative effort involving the Montana Department of Fish, Wildlife and Parks, National Park Service, U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, and the Fish and Wildlife Service, the guidelines outline operational procedures for handling nuisance bears and stipulate that acceptable release sites will be designated before the "nuisance bear season" begins.

NEW PUBLICATIONS

The Rare Vascular Plants of the Yukon, Syllogeus No. 28, was recently published by the National Museum of Natural Sciences, Canada. For each of the 313 rare plants covered in the publication, distributed in the Yukon and elsewhere, habitat, and status are among the data provided. Copies are available from the National Sciences, Ottawa, Canada K1A 0M8.

The Council on Environmental Quality has compiled *A Summary of the Legal Authorities for Conserving Wild Plants*. This may be the most comprehensive document of its type ever assembled. Included is a listing of State conservation and protection laws, each one accompanied by a chart indicating the nature of the law and references to lists of plants protected. An official State contact is also listed as a source for new or additional information. Copies will eventually be available from the National Technical Information Service in Springfield, Virginia.

The Proceedings of the Iowa Academy of Science, March 1981, contains the first complete listing of Iowa vertebrate species, with notes as to the status of each. The *Proceedings* are papers presented at a symposium on Perspectives on Iowa's Declining Flora and Fauna. Copies of this publication are available for \$3.00 from the Executive Director, Iowa Academy of Science, University of Northern Iowa, Cedar Falls, Iowa 50613.

Copies of *Understanding Predation and Northeastern Birds of Prey* are available from the New York Cooperative Extension Distribution Center, 7 Research Park, Cornell University, Ithaca, New York, at \$4.00 each.

This publication explores predation, the life history and ecology of birds of prey, and gives species accounts and color il-

lustrations of each of the birds of prey found in the northeast, including those that are endangered.

This panther, treed and radio-collared in February, will be recaptured next January to replace the lithium batteries which power the attached radio monitoring unit.



Florida Game and Fresh Water Fish Commission Photograph

FLORIDA PANTHER

Continued from Page 1

may be captured, radio-instrumented, and monitored in 1982.

The Florida panther has been protected from hunting in Florida since 1958 and was listed as Endangered by the Service in 1967. Even so, man-related activities continue to take their toll on what few remain. A Florida panther was illegally shot in the Big Cypress area in

1978. In 1980, two panthers, a male and a female, were killed by cars in separate incidents on Highway 29 in the same part of the State. Most recently while returning from monitoring his two radio-instrumented cats at 10:00 p.m. on Easter Sunday 1981, R. Chris Belden, the Commission biologist and Florida Panther Recovery Team Leader in charge of the study, found yet another road-killed panther on Highway 29. It was an 84½ pound female, pregnant with four kittens.

RECOVERY PLANNING

Continued from page 1

ter implement the 1978 legislation, were completed to standardize plan format, to improve efficiency in tracking recovery actions, and to reflect the increased utilization of recovery plans in the budget review process. These guidelines are now being used by all the Service's regional offices in preparing recovery plans; and all plans that were approved under the old format are being reviewed to comply with the new guidelines.

Recovery plans are the cornerstone of the Service's efforts to reclassify and deregulate listed species; they also serve as a means to coordinate the various programs of different agencies and organizations which have conservation responsibilities under the Act. Plans serve as a basis for the budgeting process of the Service and other agencies, and may include such activities as land acquisition, research, habitat manipulation, or law enforcement.

According to the new guidelines, regional offices (under the guidance of Regional Directors) are responsible for the development of recovery plans and the subsequent implementation of the recovery tasks described in the plan. Regional planning responsibility is designated after a species is listed.

When a species' range is entirely within a single regional boundary, that region has responsibility for planning. However, when a species' range crosses regional boundaries, the Director designates a lead region for recovery plan development.

An article in the May 1981 BULLETIN describes the procedure followed by Region 5 to develop the Plymouth Red-bellied Turtle Recovery Plan. The story illustrates, in general, the procedures which are followed in the development of all recovery plans, and describes, in particular, a plan which involves a species whose range is entirely within a single region. Other plans, however, will require more complex development when subject species have a wide geographic distribution, have many threats to their survival, and require large numbers of agencies to be involved in their conservation.

PLAN PREPARATION

The lead region for each plan has several development options to select from. Plans may be developed:

- by the U.S. Fish and Wildlife Service;
- by a recovery team;
- by an individual, committee, or group on a volunteer or contractual basis;
- by a State; or

APPROVED RECOVERY PLANS:

Lead Region

Aleutian Canada goose	<i>Branta canadensis leucopareia</i>	7
American crocodile	<i>Crocodylus acutus</i>	4
Antioch Dunes (3 species)		
Antioch Dunes evening primrose	<i>Oenothera deltoides</i> ssp. <i>howellii</i>	1
Contra Costa wallflower	<i>Erysimum vapatatum</i> var. <i>angustatum</i>	1
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	1
Arizona trout	<i>Salmo apache</i>	2
Black-footed ferret	<i>Mustela nigripes</i>	6
Blue pike	<i>Stizostedion vitreum glaucum</i>	3
Blunt-nosed leopard lizard	<i>Crotaphytus silus</i>	1
California condor	<i>Gymnogyps californianus</i>	1
California least tern	<i>Sterna albibrons browni</i>	1
Colorado River squawfish	<i>Ptychocheilus lucius</i>	6
Columbian white-tailed deer	<i>Odocoileus virginianus leucurus</i>	1
Cui-ui	<i>Chasmistes cujus</i>	1
Delmarva Peninsula fox squirrel	<i>Sciurus niger cinereus</i>	5
Devil's Hole pupfish	<i>Cyprinodon diabolis</i>	1
Dusky seaside sparrow	<i>Ammospiza maritima nigrescens</i>	4
Eastern brown pelican	<i>Pelecanus occidentalis carolinensis</i>	4
Eastern timber wolf	<i>Canis lupus lycaon</i>	3
Gila trout	<i>Salmo gilae</i>	2
Greenback cutthroat trout	<i>Salmo clarki stomias</i>	6
Hawaiian waterbirds (3 species)		
Hawaiian coot	<i>Fulica americana alai</i>	1
Hawaiian gallinule	<i>Gallinula chloropus sandvicensis</i>	1
Hawaiian stilt	<i>Himantopus himantopus knudseni</i>	1
Humpback chub	<i>Gila cypha</i>	6
Indiana bat	<i>Myotis sodalis</i>	3
Key deer	<i>Odocoileus virginianus clavium</i>	4
Kirtland's warbler	<i>Dendroica kirtlandii</i>	3
Light-footed clapper rail	<i>Rallus longirostris levipes</i>	1
Masked bobwhite (quail)	<i>Colinus virginianus ridgwayi</i>	2
Mississippi sandhill crane (revised)	<i>Grus canadensis pulla</i>	4
Northern Rocky Mountain wolf	<i>Canis lupus irremotus</i>	6
Palila (honeycreeper)	<i>Psittirostra bailleui</i>	1
Pahrump killifish	<i>Empetrichthys latos</i>	1
Peregrine falcon (eastern population)	<i>Falco peregrinus anatum</i>	5
Peregrine falcon (Rocky Mountain-Southwest population)	<i>Falco peregrinus anatum</i>	6
Plymouth red-bellied turtle	<i>Chrysomys (= Pseudemys) rubriventris bangsi</i>	5
Red-cockaded woodpecker	<i>Picoides (= Dendrocopos) borealis</i>	4
Santa Cruz long-toed salamander	<i>Ambystoma macrodactylum croceum</i>	1
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	1
Warm Springs pupfish	<i>Cyprinodon nevadensis pectoralis</i>	1
Watercress darter	<i>Etheostoma nuchale</i>	4

- by another Federal agency.

Factors determining the planning method selected include the range of the species, the complexity of the recovery actions contemplated, the number of organizations responsible for the implementation of the actions, the availability of personnel, and the expertise of the personnel utilized.

RECOVERY PLAN FORMAT

The new guidelines organize recovery plans in three parts:

1) Introduction: Background material on habitat requirements, population limiting factors, past and current distribution status, and conservation efforts,

APPROVED RECOVERY PLANS:

Lead Region

est Indian (Florida)		
manatee		
(being revised)	<i>Trichechus manatus</i>	4
hooping crane	<i>Grus americana</i>	2
oundfin	<i>Plagopterus argentissimus</i>	2

DRAFT RECOVERY PLANS:

Lead Region

merican alligator	<i>Alligator mississippiensis</i>	4
ltwater's greater prairie chicken	<i>Tympanuchus cupido attwateri</i>	2
ald eagle (southwest population)	<i>Haliaeetus leucocephalus</i>	2
ald eagle (Chesapeake Bay population)	<i>Haliaeetus leucocephalus</i>	5
ig Island forest birds (4 species)		
Akipolau (honeycreeper)	<i>Hemignathus wilsoni</i>	1
Hawaiian akepa (honeycreeper)	<i>Loxops coccinea coccinea</i>	1
Hawaiian creeper	<i>Loxops maculata mana</i>	1
Ou (honeycreeper)	<i>Psittirostra psittacea</i>	1
lay phacelia	<i>Phacelia formulosa</i>	6
lear Greek gambusia	<i>Gambusia heterochir</i>	2
omanche Springs pupfish	<i>Cyprinodon elegans</i>	2
esert slender salamander	<i>Batrachoseps aridus</i>	1
astern cougar	<i>Felis concolor cougar</i>	4
astern indigo snake	<i>Drymarchon corais couperi</i>	4
Segundo blue butterfly	<i>Euphilotes (= Shijimiaeoides) battoides allyni</i>	1
Eureka Valley Dunes (2 species)		
Eureka Dune grass	<i>Swallenia alexandreae</i>	1
Eureka evening primrose	<i>Oenothera avita spp. eurekaensis</i>	1
verglade kite (snail kite)	<i>Rostrhamus sociabilis plumbeus</i>	4
lorida panther	<i>Felis concolor coryi</i>	4
ray bat	<i>Myotis grisescens</i>	3
rizzly bear	<i>Ursus arctos horribilis</i>	6
leatherback sea turtle	<i>Dermochelys coriacea</i>	4
laryland darter	<i>Etheostoma sellare</i>	5
McDonald's rock-cress	<i>Arabis mcdonaldiana</i>	1
loapa dace	<i>Moapa coriacea</i>	1
lorro Bay kangaroo rat	<i>Dipodomys heermanni</i>	1
orthern wild monkshood	<i>Aconitum noveboracense</i>	3
kaloosa darter	<i>Etheostoma okaloosae</i>	4
regon silverspot butterfly	<i>Speyeria zerene hippolyta</i>	1
eregrine falcon (Alaska population)		
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	7
American peregrine falcon	<i>Falco peregrinus anatum</i>	7
eregrine falcon (Pacific population)	<i>Falco peregrinus anatum</i>	1
uerto Rican parrot	<i>Amazona vittata</i>	4
uerto Rican plain pigeon	<i>Columba inornata wetmorei</i>	4
ed wolf	<i>Canis rufus</i>	4
an Diego mesa mint	<i>Pogogyne abramsii</i>	1
chaus swallowtail (2 species)		
Schaus swallowtail butterfly	<i>Papilio aristodemus ponceanus</i>	4
Bahaman swallowtail butterfly	<i>Papilio andraemon bonhotei</i>	4
nail darter	<i>Percina tanasi</i>	4
ocorro isopod	<i>Exosphaeroma thermophilus</i>	2
onoran pronghorn	<i>Antilocapra americana sonoriensis</i>	2
outhern sea otter	<i>Enhydra lutris nereis</i>	1
tah prairie dog	<i>Cynomys parvidens</i>	6
irginia round-leaf birch	<i>Betula uber</i>	5
aqui topminnow	<i>Poeciliopsis occidentalis sonoriensis</i>	2
uma clapper rail	<i>Rallus longirostris yumanensis</i>	2

habitat will also be specifically identified at this time, if possible.

3) Implementation Schedule: This section specifically identifies organization or agency assignments, priorities, and funding required to accomplish the tasks described in the step-down outline. Schedules are developed to the extent justified by available information or to identify initial research needs. The first phase of the Implementation Schedule identifies recovery tasks for the first 3 to 5-year period of the plan. Such tasks could include a listing of known recovery actions and some information gathering objectives such as status surveys, habitat requirement studies, and the development of interim management plans. The next phase is developed to include new data obtained during the implementation of the first phase and identifies additional actions and studies that are needed for continued recovery. Schedules will be continually revised and updated as recovery tasks are accomplished.

KEY SECTION

The Implementation Schedule, the most important part of the recovery plan, is the detailed "working" section used in tracking accomplishments and providing the basis for the funding of recovery actions for listed species. Each phase of the implementation portion of the plan is modified continually to reflect changes and "fine tuning" necessary to meet the primary objective of the plan.

Because the implementation schedule becomes the focus of all Service activities involved in the recovery of the species, it is mandatory that all recovery tasks be identified in the plan as specifically as possible. The review of permit applications, Section 7 consultations, unsolicited research proposals, State Federal Aid proposals, and all other funding requests are examined against the Implementation Schedule. If the permit, consultation, or proposal can be identified with a specific task in the Implementation Schedule, the review process will be expedited and the likelihood of approving and funding the proposal will be increased.

Implementation Schedules are prepared in a standardized format. The most critical components of the schedule are the priorities assigned to each recovery task.

Recovery tasks are assigned priorities based on the following:

Priority 1—All actions that are absolutely essential to prevent extinction of the species.

Example: Peregrine falcon law enforcement to prevent taking.

Priority 2—All actions necessary to maintain the species' current population status.

s well as threats to the species that have resulted in its Endangered or Threatened status, are discussed in this section.

2) Recovery: The primary objective of the plan, including the parameters which need to be achieved before the species can be considered "recovered," is stated in this section. The steps to be taken for

the recovery of the species are identified in a step-down outline format, followed by a narrative providing details and describing the projects and studies listed in it. The step-down outline attempts to identify long-range as well as more immediate goals leading to the recovery of the organism. Any recommendation for the protection of essential

Continued on page 8

CITES NEWS

June 1981

The Service's Office of the Scientific Authority (OSA)—replacing the Endangered Species Scientific Authority (ESSA)—functions as staff to the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). OSA reviews applications to export and import species protected under the Convention, monitors their trade, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

TEN YEAR REVIEW OF CITES SPECIES INITIATED

A notice of a 10-year review of species listed in the CITES appendices was published by the Service (FR 6/30/81), implementing a resolution made by the Conference of the Parties to CITES at their recent meeting in New Delhi, India. The notice invites both trade and biological information from the public concerning the status of listed species that are native to North America (i.e. those having natural resident populations in North America).

The Service's review of listed species will also include any species with resident populations in the following areas for which the United States has international responsibility: Puerto Rico, Guam, the Virgin Islands of the United States, American Samoa, Midway Islands, Wake Island, Johnston Atoll, Palmyra Atoll, Kingman Reef, Howland Island, Baker Island, Jarvis Island, and Navassa Island. A list of species in Appendices I and II that are included in the North American regional review, as well as copies of criteria previously adopted by the Parties for amendments to Appendices I and II, may be obtained by contacting the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240, telephone (202/653-5948). Comments concerning the notice should be sent to the same address by November 15, 1981.

The Service intends to follow this schedule for implementing the review:

November 15, 1981—Deadline for receipt of information on species from the public.

February 1, 1982—Publication of *Federal Register* notice to announce species for which the Service will submit draft proposals to the CITES Central

Committee, and to invite public comment on these proposals.

Between April and June 1982—Review by CITES Central Committee.

September 20, 1982—Publication of *Federal Register* notice to announce the Service's final decisions on proposals to

be submitted for adoption by the Parties; submission of proposals to the CITES Secretariat.

February or March 1983—Fourth Meeting of the Conference of the Parties, at which proposals will be considered for adoption.

Rulemaking Actions

June 1981

EFFECTIVE DATES EXTENDED

The effective dates of four final U.S. Fish and Wildlife Service rules have been deferred to July 31, 1981 (FR 6/29/81). The affected rules relate to a genus of Hawaiian tree snails (*Achatinella*); Texas poppy-mallow (*Callirhoe scabriuscula*); gypsum wild buckwheat (*Eriogonum gypsophilum*); and Todsens's pennyroyal (*Hedeoma todsenii*), all of which appeared as final rules in the *Federal Register* during January 1981.

The Department of the Interior is deferring the effective dates of these species to permit reconsideration of the rules to determine whether they are major under Executive Order 12291. Written comments should be sent to the Office of Endangered Species, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. Comments must be received on or before July 17, 1981.

REDEFINITION OF HARM PROPOSED

The Office of the Solicitor (Department of the Interior) has proposed redefinition of the term "harm" which occurs in Section 9 of the Endangered Species Act of 1973 (FR 6/2/81). Section 9 makes it illegal to "take" an Endangered or Threatened wildlife species; "harm" is one of ten terms listed in this section as "taking" actions.

The U.S. Fish and Wildlife Service's implementing regulations (16 U.S.C. 1531 [19]) now include within the definition of "harm" any significant environmental modification or degradation that disrupts behavior patterns of listed animals, regardless of whether an actual killing or injuring of listed species of wildlife is demonstrated. The proposal recommends limiting the definition of

"harm" to mean only an act or omission which actually injures or kills wildlife.

There has never been a prosecution initiated by the Service under the present definition and the Department does not expect the redefinition to have any significant effect on future enforcement actions or strategy. Comments on this proposed rule must be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, on or before August 3, 1981.

PETITION TO LIST WIEST'S SPHINX MOTH ACCEPTED

A petition to list the Wiest's sphinx moth (*Euproserpinus wiesti*) has been accepted by the U.S. Fish and Wildlife Service (F.R. 6/26/81). The supporting data were submitted by Dr. Karolis Bagdonas of the University of Wyoming.

The Wiest's sphinx moth has been collected at only two sites, Weld County in northeastern Colorado and near Albuquerque, New Mexico. It has not been collected in the Albuquerque area since the 1950's; however, it was rediscovered in Colorado in 1979.

Studies by Dr. Bagdonas found that 200-300 adult moths were present in the Colorado habitat during the flight season in 1979, but only 40-50 individuals were seen in 1980. Recent pesticide spraying for grasshopper control accidentally affected the site, killing most of the moth larvae being studied by Dr. Bagdonas and his students. It is believed that some of the larvae had entered the soil and pupated prior to the spraying, thus escaping its effects. Dr. Bagdonas has obtained funding from the World Wildlife Fund to continue studies on the species in the summer of 1981.

Comments on this notice should be submitted on or before September 24, 1981, to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240.

ARMY CORPS OF ENGINEERS SPONSORS MUSSEL RESEARCH

The U.S. Army Engineer Waterways Experiment Station (WES) in Vicksburg, Mississippi, is currently working on a 2-year project to expand the Corps of Engineers' knowledge of mussels, especially endangered and potentially endangered species. The research effort is headed by Dr. Andrew Miller of the Environmental Laboratory's Waterway Habitat and Monitoring Group at WES.

Of special concern to the Corps are five mussel species which were subjects of a notice of review published last year by the U.S. Fish and Wildlife Service (see May 1980 BULLETIN). All of these mussels have been found in a 100-mile stretch of the Tombigbee River from Fulton, Mississippi, to Gainesville, Alabama. Parts of this stretch will become run-of-the-river reservoirs under the Tennessee-Tombigbee Waterway Project plans.

Mussels need flowing water to bring food and carry away waste. Many

species seem to prefer running water and gravel bottom habitat. But because of the Tennessee-Tombigbee project, water levels and flow, and sedimentation rate have or will be changed in much of the river. Therefore, mussels in some areas may be smothered by silt that settles in the calmer waters. In addition, maintenance dredging, necessary when the project is operated, poses a potential threat to the species.

Miller hopes that the Corps can counter the possible loss of present mussel habitat with the creation of man-made bars. These bars would be constructed by dumping large amounts of gravel off barges at specified sites, and then relocating mussel populations onto the bars. These bars would also have to be maintained for at least part of the year to reduce sediment accumulation.

If the mussels are relocated successfully onto the man-made bars, Miller plans further monitoring of the mussels

to see if they adapt and reproduce normally. While mussels have been relocated to new sites before, this would be the first time a man-made site would be used.

Other objectives of the WES mussel project include the development of a field handbook on endangered mussels, a thorough listing of outside consultants whom Federal biologists can contact with specific mussel problems, and a listing of various mussel collections at universities and museums. A computerized search and retrieval system for literature pertaining to mussels, another aspect of the project, is now operational. Miller's project also will gather and spread information on mussel sampling techniques and equipment.

Miller organized a workshop on endangered freshwater mollusks, the first of its kind to be hosted by the Corps, which was conducted at WES on May 19-20, 1981. Over 50 attendees from various Corps elements, universities, Federal agencies, museums, and private concerns were present. A second endangered mollusk workshop is being planned.

SEA TURTLE ACTIVITY ON REFUGES REPORTED

Fifteen National Wildlife Refuges (NWR) conducted surveillance, management, and protection activities for sea turtles during 1980. The accompanying chart summarizes this work which was primarily related to the loggerhead turtle (*Caretta caretta*). A much smaller amount of data was collected on the green sea turtle (*Chelonia mydas*) while only incidental information on the Kemp's ridley sea turtle (*Lepidochelys kempii*) was reported.

Most of the work reported in the summary chart was conducted by refuge personnel and holders of special research permits. Participating refuges are located in Virginia, North Carolina, South Carolina, Georgia, Florida, and Louisiana.

A National Marine Fisheries Service (NMFS)/Fish and Wildlife Service (FWS) jointly sponsored southeastern aerial survey of marine turtle nesting activity was initiated in 1980. Employees on Pea Island, Cape Romain, Blackbeard Island, Wassaw Island, Hobe Sound, Merritt Island, Ding Darling, Egmont Key, and St. Vincent NWRs participated in ground-truthing surveys during the 1980 aerial surveys.

There was an unusually high incidence of dead sea turtles washing onto beaches in 1980, particularly in Virginia, South Carolina, Georgia, and Florida. These deaths were thought to be closely associated with pound net fishing in Virginia, sturgeon netting in South Carolina, and shrimp trawling later in the summer in South Carolina and Georgia. Over 1,800 sea turtles were recorded as found stranded on the beaches of

southeast through a newly instituted Sea Turtle Stranding — Salvage Network cooperatively funded and administered by

NMFS, FWS and the Smithsonian Institute's Scientific Event Network. Many refuge employees cooperated in this new venture.

SEA TURTLE MONITORING RESULTS ON 15 U.S. FISH AND WILDLIFE SERVICE NATIONAL WILDLIFE REFUGES—1980

Refuge	Beaches		Nesting Activity ²			Nest Losses		Hatchery	Nests Screened	Stranded	Tagged
	Total Miles	Miles Surveyed	Total Nests	Succ. Nests	Hatchlings	Tide Loss	Pred. Loss				
Chincoteague	11	9	0	0	0	0	0	No	0	1	0
Fisherman Isl	2	1	0	0	0	0	0	No	0	11	0
Back Bay	4	4	1	1	104	0	0	No	1	17	0
Pea Island	12 ^a	12 ^a	12	8	538	2	0	Yes	0	21	0
Cape Romain	21	17	1,191	710	67,753	383	95	Yes	15	42	0
Wassaw Island	7	5 ^a	50	48	4,338	0	1	Yes	5	55	44
Blackbeard Isl	8	5	124	119	11,106	2	3	Yes	57	50	0
Merritt Island ^b	6	6	468	346	26,746	9	113	Yes	0	1	141
			17	15	1,273	0	0		13	0	4
Hobe Sound ^b	3	3	1,104	1,069	86,540	35	20	No	0	2	0
			23	23	1,900	0	0				0
Key Deer	2 ^a	2 ^a	0	0	0	0	0	No	0	1	0
Ding Darling	1	1	4	4	480	0	0	No	0	0	0
Egmont Key	3	3	5	4	600	1	0	No	0	1	0
Chassahowitzka	3	3	0	0	0	0	0	No	0	0	0
St Vincent	12	7	8	3	92	3	2	No	6	13	0
Delta Breton	60	60	0	0	0	0	0	No	0	1	0
Totals Loggerhead	156 ^a	140	2,967	2,312	198,297	435	234	—	84	216 ^a	185
Green			40	38	3,173				13		4
Combined			3,007	2,350	201,470				97		189
Percentage Diff's 1979 to 1980	-1.2	+63.4	-13.0	+53.1	+47.1	-52.7	75.6	—	37.0	+173.4	-43.4

a—includes one Ridley

b—loggerhead data above and green below

(1) Delta-Breton in Louisiana reported the largest amount of available beach. This area was checked only three times during the summer, however, yielding no turtle activity except one stranding

(2) Total successful nests in 1980 were 815 higher than in 1979 (+53.1%) even though the total nests laid were 13% fewer. Reduced losses were attributable to lower predation and to more amenable weather in 1980. The resultant hatching total thus was a substantial increase from the previous year



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

CALIFORNIA APPROVES NEXT STAGE OF CONDOR RESEARCH

On August 7, 1981, the California Fish and Game Commission unanimously approved the granting of a State permit, authorizing the capture and handling this season of a maximum of nine condors (*Gymnogyps californianus*) for captive breeding and studies in the wild using radio telemetry. Accomplishment of these approved activities is central to the Cooperative California Condor Conservation Program, signed in December 1979, by the Fish and Wildlife Service, National Audubon Society, California Department of Fish and Game, U.S. Forest Service, and the Bureau of Land Management.

G. Ray Arnett, the Interior Department's Assistant Secretary for Fish and Wildlife and Parks stated regarding the approved permit, "We are pleased with the Commission's vote of confidence. That confidence is well placed in the Fish and Wildlife Service, with its proven success record of breeding endangered species in captivity. While no one can guarantee that our efforts with the condor will succeed, I am convinced that the program is biologically imperative. Time is running out for the California condor."

Fewer than 30 of these large birds (9-foot wingspan) remain in the rugged mountainous areas north of Los Angeles. Experts estimate that the condor population has declined steadily by about 2.5 birds per year since 1966. "Unless this trend is reversed," Arnett said, "the condor could become extinct within the next decade and could be functionally extinct before then."

According to Dr. H. Randolph Perry, the Service's supervisor of the California Field Station, trapping efforts will begin in October. Only 5 condors may be cap-

tured without further authorization from the California Fish and Game Commission: three for captive breeding and two for the attachment of radio transmitters. The three captives will be used to initiate captive breeding programs at the San Diego Wild Animal Park and the Los Angeles Zoo. The two birds fitted with radio transmitters will be carefully monitored before permission is sought to capture additional condors for studies using radio telemetry.

Badly needed habitat utilization information will become available once the

first California condors are fitted with transmitters and radio-telemetry studies are begun. Studies with the Andean condor (*Vultur gryphus*), the closest surrogate species available, has also yielded valuable data on sources of mortality; roosting, breeding, and feeding areas; and movement patterns. (See the February 1981 BULLETIN.)

The Federal permit authorizing the capture, captive breeding, radio telemetry, and other research was issued on July 24, 1981. State and Federal permits are necessary to fully implement the long-range Cooperative Program.

Additional stories on the California condor and condor recovery efforts may be found in the BULLETIN's May 1979 Special Report and regular issues for January and August of 1980.



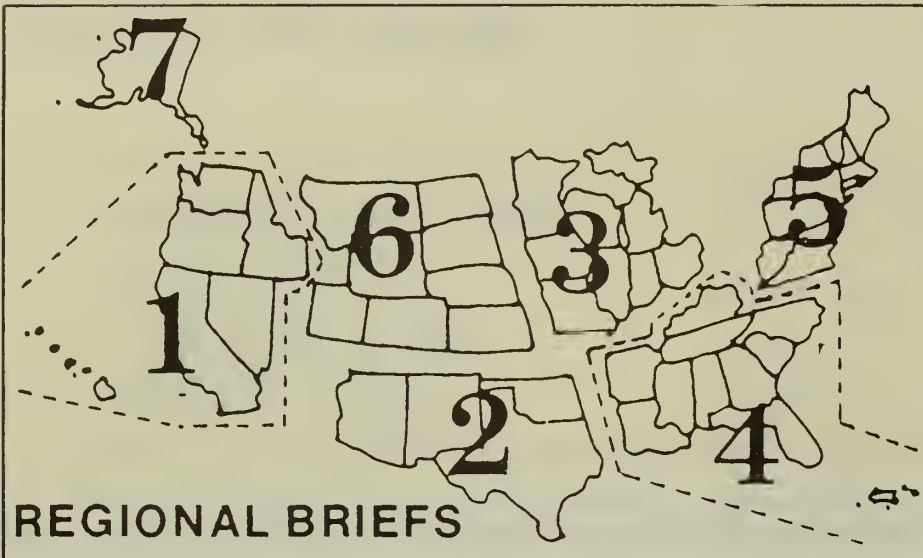
The colorful Hawaiian tree snail pictured above (*Achatinella sowerbyana*) is one of 19 species of the genus *Achatinella* still thought to remain on the island of Oahu, Hawaii. The entire genus, endemic to the island and historically composed of 41 species, is listed as Endangered.

January Rules Become Effective

The Department of the Interior has completed its review of four final U.S. Fish and Wildlife Service rules which were published during January 1981. The rules have been determined "not major" with regard to Executive Order 12291, and August 31, 1981, has been established as a new effective date, replacing the dates originally specified for each affected species.

The affected rules related to a genus of Hawaiian tree snails (*Achatinella*); Texas poppy-mallow (*Callirhoe scabriuscula*); gypsum wild buckwheat (*Eriogonum gypsophilum*); and Todsens's pennyroyal (*Hedeoma todsenii*). For additional information on these species see the February 1981 BULLETIN, pages 5-7.

Photo by William P. Mull



Endangered Species Program regional staffers have reported the following activities for the month of August.

Region 1—This year 59 young peregrines (*Falco peregrinus*) were

fledged at 41 active nest sites in California. Natural fledging occurred with 40 of the birds; 19 were placed in wild nests which might have failed. An additional five young fledged from two hack sites.

All six eaglets (*Haliaeetus leuco-*

cephalus) transferred from Washington to Catalina Island, California, have fledged. Natural nesting has not occurred on the island for 30 years.

Region 2—As part of a joint State/Federal action that should prevent the razorback sucker (*Xyrauchen cypho*) from being listed under the Endangered Species Act as Threatened, 7,000 fish were stocked into the tributaries of the Salt, Gila, and Verde Rivers in Arizona. An additional 7,000 razorbacks will be stocked in September, as will an estimated 100,000 fish per year for the next 9 years.

The Rancho Nuevo sea turtle project is completed for this season—the most successful year to date with regard to numbers of adult nesters and eggs laid. (See August 1981 BULLETIN, Regional Brief 2 for more information).

A contract has been awarded for a 1-year study to determine the status of the ocelot (*Felis pardalis*) in Texas. The study should better define what steps need to be taken to effect the species recovery.

Dr. Aaron H. Long, a professional veterinarian in Texas, has been presented the U.S. Fish and Wildlife Service's citizen award for his contribution to the national effort to restore the red wolf (*Canis rufus*). Dr. Long has provided veterinarian services to the wolf since 1973, assisting in regional field studies, giving medical assistance, and helping with the captive breeding program in Tacoma, Washington.

Region 3—Service botanists representing regions 1-6 met with representatives of the Missouri Department of Conservation, the Missouri Botanical Garden, and the Nature Conservancy in St. Louis, Missouri, August 19, 1981, to do preliminary planning for a national plant recovery symposium. The symposium is tentatively scheduled for the end of 1982.

Region 4—The Chittenango ovate amber snail (*Succinea chittenangoensis*), New York population, was listed as Threatened in a final rule published in July 1978. It was noted in the final rule that a snail population identified by Leslie Hubricht as *S. chittenangoensis* has been recently discovered on the North Carolina-Tennessee border (Stratton Gap area). The Service deferred taking any listing action on this discovery for lack of adequate information.

In August of this year, personnel from the Asheville Area Office, in company with Leslie Hubricht and others, revisited the Stratton Gap area and collected a number of specimens which appear, almost certainly, to be *S. chittenangoensis*. They also collected other specimens some 3 miles away with a slightly different form which could possibly be the same species. Efforts to

Continued on page 5

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Arkansas Game and Fish Commission

State Report: Arkansas Studies State Species of Concern

In recent years an increasing number of panther (*Felis concolor*) reports have been made to the Arkansas Game and Fish Commission, giving new hope that this species still remains in small numbers in the more remote areas of the State. The last actual panther kill report, however, dates back to 1975.

As sighting reports are made, they are "checked out" by Commission biologists and ranked on a scale of one to four according to degree of validity. In 1978, both scat and track (level 1) indications of the species were found. Since that time, five separate sightings have been made by State and Federal employees (level 2). All of the sightings were made within the areas traditionally recognized as panther habitat; however, no observations were reported in close proximity to the White River National Wildlife Refuge where they are also thought to be.

The panther historically found in Arkansas is listed as Endangered under the Endangered Species Act of 1973, and is one of the species being studied by the Arkansas Game and Fish Commission under its Cooperative Agreement with the U.S. Fish and Wildlife Service which was signed in 1977. Matching funds from this agreement have helped support surveys to determine the incidence and location of the species in Arkansas. The funds have also assisted the State with public education projects which emphasized the species' need for protected habitat and isolation. Preliminary considerations have been given to establishing the critical habitat of the species.

Other federally listed species which Arkansas has studied with the assistance of Cooperative Agreement funds from Section 6 of the 1973 Act are the red-cockaded woodpecker (*Picoides [=Dendrocopos] borealis*), American alligator (*Alligator mississippiensis*), Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), and the Ozark big-eared bat (*Plecotus townsendii ingens*).

Red-Cockaded Woodpeckers

Arkansas hosts a remnant population of the red-cockaded woodpecker.



Arkansas Game and Fish biologists, Sam Barkley (left) and Craig Uyeda (right), taking plaster casts of suspected puma track.

Nesting and roosting habitat for this species are specific to 60 year old (or older) pine trees which are diseased by red-heart fungus (*Fomes pini*). These trees must have sizeable buffer areas and understory low enough to leave hollowed out tree cavities clear for access. Unfortunately, intensive forest management in southern Arkansas, as in other areas of the Southeast, has reduced the availability of mature pines, especially diseased ones, and has thereby contributed to the decline of woodpeckers in the State. About four years ago the Commission initiated, through the University of Arkansas (UA), an extensive study to determine the distribution, abundance, and critical habitat characteristics of the species in Arkansas. A search for remaining suitable

pines was part of the study.

Location reports of over 1000 cavity trees used for nesting and roosting, or both, by this bird were received from Georgia-Pacific Corporation, International Paper Company, Potlatch Lumber Company, Olinkraft Corporation, the Felsenthal National Wildlife Refuge, the Arkansas Natural Heritage Commission, the Arkansas Audubon Society, and from private individuals. After visiting most of the sites, the UA team, headed by Dr. Douglas James, was able to determine rather precisely the actual number of red-cockaded cavity trees remaining in Arkansas. Their studies show that 88% of the known colonies are on private timber land.

Continued on page 4

State Report:

Continued from page 3

A 2-year follow up project, funded by the State through UA, was begun in 1980 to accomplish two tasks related to the red-cockaded woodpecker. The first was to determine the status of the species in the Ouachita National Forest and the second dealt with characterizing its summer foraging habitat requirements at the Felsenthal National Wildlife Refuge. Part one of the study was accomplished by cruising all accessible roads in the forest and visually estimating the past or present suitability of observed red-cockaded woodpecker habitats. Areas that may have been inhabited by the species in the past were also examined. The survey indicated that large tracts of the forest are presently unsuitable for use by the species due to the lack of suitable pine stands. The second part of the project involved trapping and color banding several red-cockaded woodpeckers at the Felsenthal National Wildlife Refuge located in southern Arkansas. A clan having a marked individual was followed from roost departure in the morning through the day, enabling the researchers to determine home range, territory size, and foraging habitat characteristics. The results of this study will be published this fall.

The Felsenthal National Wildlife Refuge contains high densities of red-cockaded woodpeckers. Because of favorable management practices there, the survival of the woodpeckers seems assured. The future of the red-cockaded woodpecker on private lands, however, is not bright.

American Alligators

Since 1972 the State has restocked 2,652 alligators in suitable portions of the species' historical range in Arkansas. Some were placed on State land, but most of the animals were placed, at the owner's request, on private land. (Land-owners desire the alligator as a control animal for nuisance animals.) Most of the translocated individuals were taken from Louisiana's Sabine and Rockefeller National Wildlife Refuges.

Indications are that the translocated alligators are thriving and that some reproduction is occurring among the stocked alligators. Stocked individuals, marked by clipped tail scutes, have been seen nesting in the southwest corner of the State, and young (1 to 2 feet long) alligators have also been seen in areas previously void of the species prior to restocking. More stocking will be done in selected, remote sites, particularly in southern and eastern delta counties, in areas free from the threat of drainage, cultivation and conflict with human interests.

Endangered Bats in Arkansas

All three of Arkansas' federally listed bat species are found historically in the Ozark Mountain region in the northwestern and north central section of the State. In order to gather information on their critical habitats and to assist in recovery planning for these species, the Commission contracted with Dr. Michael Harvey of Memphis State University (MSU) to conduct several years of research. The U.S. Forest Service (Ozark National Forest) and the National Park Service (Buffalo National River) also supported the research on lands they manage. Dr. Harvey and his assistants had considerable success in locating caves and colonies of the listed bats.

Initial efforts of the MSU team consisted of cave and colony searches on a county by county basis. A variety of contacts were made for leads, including personnel from local, State, and Federal governmental agencies; members of the Association for Arkansas Cave Studies; the Cave Research Foundation; local spelunkers; and biologists and geologists from the State colleges and universities. Existing literature, which is relatively small, was also reviewed. The MSU researchers received information on over 200 caves in the State; they found approximately 60 caves to be significant habitat for Arkansas endangered bats. As a result of their observations and study, the team has made initial management suggestions, appropriate to each bat cave situation.

Bonanza Cave, located in Baxter County near the White River on Ozark National Forest lands, is the only major gray bat hibernaculum in Arkansas and one of the most important caves for the species west of the Mississippi River. MSU researchers found over 250,000 bats at this cave. The team spent con-

siderable time observing the flight patterns of the bats in and out of the cave, and noted that the animals had some difficulty negotiating the gate which was already in place at the cave's opening to protect the species. Upon the recommendation of the U.S. Fish and Wildlife Service's Indiana Bat/Gray Bat Recovery Team, the MSU team replaced this small horizontal gate with a vertical "mock up" gate which they designed. The new gate which was placed a few feet from the cave's natural entrance, appeared to allow easier access for the bats. In early August 1981, a permanent gate, modeled on the "mock up," was put in place by the Forest Service.

The Indiana bat is not very common in Arkansas. The MSU team did find one hibernating colony of about 5,000—the largest known colony in the State. They also found the first known maternity colony (about 170 bats) and the largest known hibernating colony (about 420) of the Ozark big-eared bat.

Bald Eagle

According to the mid-winter National Wildlife Federation bald eagle survey in which the State participates, Arkansas has between 400-500 migrating eagles. However, no successful nesting of the species has taken place in Arkansas since about 1930, although there have been several known attempts in recent years. In hopes of reestablishing a breeding eagle population in the State, the Commission is planning to build several hacking stations next year from which they will fledge eaglets.

Fish Species of Concern

The Commission has contracted jointly with Dr. Henry W. Robinson of Southern Arkansas University



Arkansas Game and Fish Commission biologists measuring and weighing marked alligators prior to releasing them in Arkansas.

Arkansas Game and Fish Commission Photo

(Magnolia) and Dr. George L. Harp of Arkansas State University (Jonesboro) to study four endemic Arkansas fish. These "species of concern" are the pale-back darter (*Etheostoma pallidum*), yellow cheek darter (*Etheostoma moorei*), Caddo madtom (*Noturus taylori*), and Ouachita madtom (*Noturus lachneri*). All of these fish were

included in a 1975 status review published by the Fish and Wildlife Service.

Arkansas' Program

Arkansas' endangered species program is run entirely by two Commission employees, Mr. Harold E. Alexander,

Endangered Species Coordinator, and Mr. Sam Barkley, Endangered Species Biologist. Both men are located within the Commission's River Basin and Governmental Relations Division, which is, essentially, a review agency for proposed projects. Work involving some of the States' endangered species and much coordination work is done by this small staff, however, most of the species work is accomplished through contracts with various State academic institutions and through other divisions of the Commission.

Mr. Alexander and Mr. Barkley are assisted by a twelve member Technical Committee composed of biologists from State colleges and universities. This advisory group is now reviewing a list of species which will ultimately be considered the State's official list of species of concern.

Arkansas has no specific endangered species legislation, but receives authority for the conservation of all fish and wildlife through a State Constitutional Amendment. Authority to conserve endangered plants resides with the Arkansas Natural Heritage Commission. Hopefully, funding for both animal and plant endangered species conservation will soon be enhanced by a tax checkoff system—possibilities for which are being evaluated at this time.



Dr. Michael J. Harvey examining clusters of Indiana bats (*Myotis sodalis*) in a Newton County, Arkansas, cave. Clusters contain over 300 bats per square foot.

Regional Briefs

Continued from page 2

confirm the identification are now in progress.

Beginning in the winter of 1979-1980, a problem came to light involving sea turtle mortalities caused by maintenance dredging in the Port Canaveral ship channel, Brevard County, Florida. It was first thought only to involve hibernating turtles, but now it appears that some turtles bury up in the ship channel even during warmer months. Removing the turtles ahead of the dredge by trawling and releasing them some distance away was tried this past year; nevertheless a number of turtles were killed.

During the spring of 1981 a task force composed of all involved agencies was formed to make recommendations to the Army Corps of Engineers for alleviating the problem. Previous mortalities have been associated with dredging accomplished through private contractors, but this summer a Corps dredge has been operating in the channel, and the task force has capitalized on this opportunity to further evaluate the problem. One task force recommendation that is to be tried in the near future is

the use of a barrier cage placed on the dredge's suction foot to exclude the turtles. An evaluation of using a trawler to remove turtles from the dredge's path will also be conducted. The captured turtles will be equipped with sonic tags and then released both in the immediate area and some distance away in order to study their dispersal. Hopefully these studies will eventually lead to a solution to the problem.

Region 6—Service biologists on the Colorado River Fishery Program Team located a Colorado squawfish (*Ptychocheilus lucius*) spawning area on the Yampa River in Colorado. The concentration of spawning fish was found by following a radio-tagged squawfish. This is the first time a major spawning area for the Colorado squawfish has been found and documented.

The Service is developing a Conservation Plan for the Endangered Colorado squawfish, humpback chub (*Gila cypha*), and bonytail chub (*Gila elegans*) in the Upper Colorado River system. It should be completed in mid-1982. The Plan will describe in detail how certain recovery actions identified in the recovery plan as being needed for the preservation, recovery, and maintenance of the fish will be carried out. Information gained from the Colorado River Fishery Program will be invaluable

during the development of management practices that will be presented in the Plan. Funding to carry out the Plan will come primarily from the water users and developers whose projects are responsible for the degradation of the fish habitats.

The Montana Department of Fish, Wildlife and Parks, U.S. Forest Service, Bureau of Land Management, and the Service have embarked on a 10-year wildlife monitoring/evaluation program of the Rocky Mountain Front area in Montana. Many species will be studied, including the following listed species: grizzly bear (*Ursus arctos horribilis*), gray wolf (*Canis lupus*), peregrine falcon (*Falco peregrinus*), and bald eagle (*Haliaeetus leucocephalus*). The program will monitor the impact of human activity on wildlife displacement, population parameters, and habitat changes. The information will be used to develop and implement land management plans, recovery plans, and management guidelines.

Region 7—Approximately 390 Aleutian Canada geese (*Branta canadensis leucopareia*) from Patuxent Wildlife Research Center and Northern Prairie Research Center were released on Alaid-Niski Islands in the Aleutians. The Service hopes to establish nesting areas there as has been done on Buldir.

Dallas/Fort Worth Designated Port of Entry

Dallas/Fort Worth (DFW), Texas, has been designated by the Service as the United States' ninth Customs port of entry for the importation and exportation of wildlife (F.R. 9/1/81), effective immediately. The "designated port" status authorizes importers and exporters of wildlife, including parts and products, to use direct international air service to and from DFW, thereby eliminating the need to route shipments through other designated ports or to obtain special exception permits.

Background

On July 14, 1980, the Service published in the *Federal Register* a proposal to classify DFW as a designated

port. A public hearing was then held on July 30 in Washington, D.C., and comments from interested parties were accepted until August 13. Of the eight responses to the proposal, half supported it and half wanted the status for Houston, Texas, either in place of or in addition to DFW.

In reply, the Service stated that it had considered Houston, but decided on DFW because tremendous growth in air transportation has created world trade centers in inland cities. About 70 percent of the wildlife inspected and cleared by the Service arrives in the U.S. as air

cargo, and another 10 percent as part of the accompanying baggage of airline passengers. The Service also noted that the DFW airport, which is already one of the world's busiest, is expected to continue its accelerated growth.

The designated port is the keystone of the wildlife importation and exportation control process regulated by the Service. Authority for such designations, and the requirement (with limited exceptions) that all wildlife be imported and exported through ports of entry, are found in Section 9(f) of the Endangered Species Act.

Federal Aid Programs Fund Endangered Species Research

Prior to 1976 when Congress first authorized Grant-in-Aid funds under Section 6 of the Endangered Species Act of 1973, some States used Federal Aid in Wildlife Restoration (Pittman-Robertson or P-R) and Federal Aid in Sport Fish Restoration (Dingell-Johnson or D-J) matching funds for endangered species research and inventories. Both P-R and D-J are still being used by some States for endangered species, under a three-fourths Federal funding arrangement.

Funds for the P-R program come from a manufacturer's excise tax on sporting arms, ammunition, archery equipment and handguns and they may be used to benefit wild birds and mammals, and for hunter education. Funds for the D-J program come from a manufacturer's excise tax on certain sport fishing equipment. This program is more restrictive than P-R in that only projects which involve potential sport fish species (endangered trout or squawfish for example) may be funded.

The table below lists the endangered species, the Federal funds planned to be spent in Fiscal Year 1981, and the States involved in research and inventories on endangered species. Except where specified all funds are from the P-R program.

SPECIES/JOB	FEDERAL \$	STATE/TERRITORY
Mammals		
Bats, Marianas fruit ¹	7,600	Guam
Bear, grizzly	24,225	Montana
Cats (ocelot, margay, jaguar)	5,109	Texas
Jaguar	750	Arizona
Pronghorn, Sonoran	3,705	Arizona
Birds		
Alala (Hawaiian crow)	12,450	Hawaii
Bobwhite, masked	750	Arizona
Crane, whooping	6,537	Texas
Birds		
Doves, (Native) ¹	2,800	Guam
Eagle, bald	4,350	Arizona
Eagle, bald	1,500	Nevada
Eagle, bald	4,716	Texas
Falcon, peregrine	750	California
Falcon, peregrine	375	Nevada
Falcon, peregrine	5,437	New Mexico
Falcon, peregrine	375	South Dakota
Falcon, peregrine	1,955	Texas
Forest Birds	5,850	Hawaii
Gallinule ¹	2,000	Guam
Hawaiian Coot	2,000	Hawaii
Hawaiian Gallinule	2,000	Hawaii
Hawaiian Stilt	2,000	Hawaii
Koloa (Hawaiian Duck)	2,000	Hawaii
Nene	18,450	Hawaii
Palila	1,725	Hawaii
Pelican, brown	46,416	Puerto Rico
Pelican, brown	3,144	Texas
Pelican, brown	9,100	Virgin Islands
Rail, Guam ¹	2,400	Guam
Rail, Yuma clapper	7,500	Arizona
Shearwater, Newell's Manx	2,100	Hawaii
Swiftlet ¹	1,700	Guam
Woodpecker, red-cockaded	2,751	Texas
Fish		
Trout, Arizona ²	750	Arizona
Multiple Species Studies		
Status work/listed species	750	Arizona
Coordination & Technical Assistance	3,600	Guam
Recovery Plan Development	3,750	Hawaii
Status work/listed species	1,125	Kentucky
Zuni Mountains Area Survey ³	2,550	New Mexico
Status Work/listed species	36,156	Texas

¹—Candidate species

²—D-J funds

³—Both P-R and D-J funds

August 1981

The Service's Office of the Scientific Authority (OSA)—replacing the Endangered Species Scientific Authority (ESSA)—functions as staff to the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). OSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

OSA Sets November Deadline for Data

In the June 30, 1981, *Federal Register* the Service published a 10-year review of species listed in the CITES appendices. (See July 1981 BULLETIN). Since it is imperative that the appendices reflect the true biological and trade status of the species listed on them, OSA urges all persons having such specialized knowledge of these species to provide written data and comments by November 15, 1981.

A packet of information including: 1) a list of all species listed under CITES; 2) lists of native North American plants and wildlife listed under the treaty; 3) a copy of the criteria for listing adapted by the CITES party nations in 1976 ("Berne Criteria"); and 4) a copy of the format by which proposals are submitted, has been assembled to assist commentators in compiling and submitting data. To receive this information write or call the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240, phone 202/653-5948.

Revised Appendices Available

Copies of the revised appendices to the CITES (50 CFR Part 23) which include the amendments adopted by the CITES Parties of the New Delhi meeting in March 1981 were published in the September 4, 1981, *Federal Register*. Copies are available from the Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

August 1981

Service Recognizes Recovery of Alligator in Louisiana

by Michael Bender

In formal recognition of the biological recovery of the American alligator (*Alligator mississippiensis*) in Louisiana, the Service has reclassified the species in that State to the less restrictive category of Threatened by Similarity of Appearance (F.R. 8/10/81). This action permits a regulated statewide harvest, in accordance with the Service's special rules on Threatened species and with State law. Except for minor clarifications of the boundary between Endangered and Threatened alligators in South Carolina and Georgia, the rule does not affect the classification of this reptile in other parts of its range.

Decline and Recovery

The alligator was listed as Endangered in 1967 after poaching and overhunting led to a decline in the species. Subsequent recovery of the alligator in some parts of its range under Federal and State protection has allowed the Service to gradually reclassify the species in those areas where it is most secure (see accompanying map).

As part of a continuing effort to monitor the condition of the alligator in Louisiana, the Service contracted Dr. R. H. Chabreck of Louisiana State University in 1979 to compile a status review. His findings, along with two reports (1978 and 1980) by Dave Taylor of the Louisiana Department of Wildlife and Fisheries, provided evidence of the species' recovery used in developing the May 1, 1981, reclassification proposal (see May 1981 BULLETIN).

Comments on the Proposal

Two public meetings on the proposal were held on May 28 at Louisiana State University, with a total of about 70 people in attendance. After a presentation by Service personnel and a description of Louisiana's alligator management program by a State representative, fourteen comments were received. The only comment unfavorable to the proposal was presented on behalf of the Fund for Animals, Inc., which questioned the advisability of opening non-marsh areas to alligator harvest, and suggested that a final decision be delayed until data furnished by the State could be verified independently. In response, the Service pointed out that: 1) the Service participated in the gathering of data, 2) the information was independently evaluated, and 3) alligator habitat in

Louisiana is abundant and relatively secure. The remaining comments supported the proposal.

Most of the written responses received during the 60-day public comment period also favored a reclassification. Representatives of the American Society of Ichthyologists and Herpetologists, IUCN/SSC Crocodile Specialist Group, and Florida and Georgia State wildlife agencies agreed that the alligator has recovered in Louisiana. The Governors of Louisiana and Arkansas also endorsed the proposal, as did the American Alligator Recovery Team.

Effects of the Reclassification

The final rule, which took effect upon publication, changes the status of the alligator in all Louisiana parishes to Threatened by Similarity of Appearance. This designation transfers management authority to the State, while assisting Federal wildlife law enforcement personnel in protecting alligators of less secure populations as well as other crocodilians.

For a number of years, Louisiana has conducted a controlled harvest for alligators in the southern parishes where the reptile had already been recognized as recovered, and the reclassification gives the State the option to broaden the harvest statewide in accordance with special Service regulations and State laws. This year's season ran from August 31 through September 30, and the number of additional animals taken is thought by the State to be marginal. Although an expanded harvest program is not expected to have a detrimental effect on the species' population as a whole within the State, the Service will continue to monitor its status. Further, exportation of alligators (and products made from them) will remain subject to control under the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The reclassification to Threatened by Similarity of Appearance also removes Federal agency responsibilities under Section 7 of the Act. It is not, however, an irreversible commitment by the Service; relisting of the alligator in Louisiana would be possible if the State substantially changes its management program, or if other changes occur which pose new threats to the species.

Conference

The third *Rocky Mountain Regional Plant Conference*, entitled "Energy Development and Rare Plants: Planning for the Future," will be held November 5-6, 1981, at the Denver Botanical Gardens, 909 York Street, Denver, Colorado. The conference is sponsored by the Botanical Gardens in conjunction with the native plant societies of Colorado, New Mexico, Utah, and Wyoming and with the Association of Western Native Plant Societies. For additional information call Jacqui Lansing (303/234-6443) or Scott Peterson (303/623-1913). General admission will be \$10.00; admission for Denver Botanical Gardens or Native Plant Society members and students will be \$5.00. Fees should be sent to the Colorado Native Plant Society, Rare Plant Conference, P.O. Box 200, Fort Collins, CO 80522.

New Publications

These are The Endangered Species, a book by Charles Cadieux, illustrated by Bob Hines, was published in June 1981 by Stone Wall Press, Inc., Washington, D.C. 20007. It is currently being distributed by the Stephen Greene Press, Inc., Battleboro, Vermont, 05301 at \$15.00 per copy. Beginning January 1982, the book will be distributed by Stackpole Books, Cameron and Kelker Streets, P.O. Box 1831, Harrisburg, Pennsylvania, 17113 at \$16.95 each.

Just over 200 pages in length, the book contains 32 short chapters, each directed to one, or several, species on the brink of extinction. The remaining 15 chapters, also short, explain endangered species legislation, list endan-

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	3	0	1	5	0	9	8
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	23	756

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 17 animals
8 plants

Number of Critical Habitats listed: 50
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 41
Number of Cooperative Agreements signed with States:
38 fish & wildlife
10 plants

August 31, 1981

gered species, describe the environmental roles of various Federal agencies, discuss certain conservation issues, and refer the reader to other sources of information.

Rare and Endangered Vascular Plant Species of West Virginia, prepared by a group of West Virginia botanists, is available from the Service's Regional Office in Newton Corner, Massachusetts. A limited number of similar publications for Delaware, Maryland, Pennsylvania,

and Virginia are also available. Request copies from Dick Dyer, U.S. Fish and Wildlife Service, Suite 700, One Gateway Center, Newton Corner, Massachusetts 02158.

A new publication entitled *Vascular Plant Species of Concern in Idaho* is available for \$7.50 from the Forest Wildlife and Range Experiment Station, University of Idaho, Moscow, Idaho 83843. This work was partially funded by the Service's Denver Regional Office.



ENDANGERED SPECIES TECHNICAL BULLETIN



Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES

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Endangered Species Program, Washington, D.C. 20240

Recovery Plan Completed For Commanche Springs Pupfish

The Commanche Springs pupfish (*Cyprinodon elegans*), listed as Endangered in 1967, is expected to benefit from the Service's approved Commanche Springs Pupfish Recovery Plan, signed September 2, 1981. The plan identifies three major threats to this west Texas species and prescribes actions to be taken to prevent or mitigate these threats.

Mining of underground waters for municipal and agricultural purposes has severely altered the habitat of the species. The fish occurred historically in two isolated spring-systems 190 km apart in the Pecos River drainage of southwestern Texas; now its habitat consists mostly of irrigation canals near Balmorhea, Reeves County, Texas.

The large flow of Commanche Springs (up to 66 cfs), which the species used to inhabit, was utilized as early as 1875 to irrigate more than 6,000 acres of farmland in Pecos County. The pupfish was extirpated from its type locality when Commanche Springs went

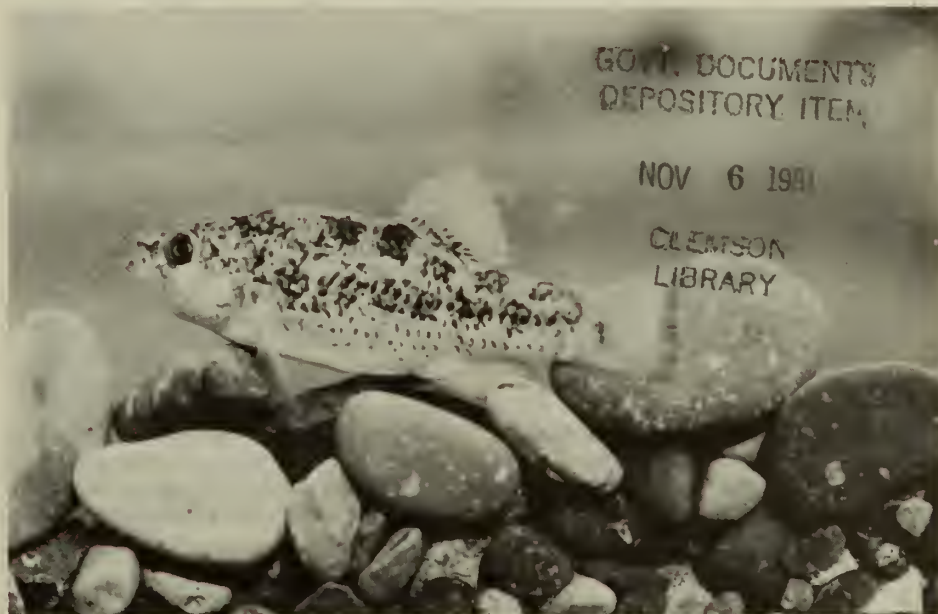


Photo by James E. Johnson

The Commanche Springs pupfish pictured above is part of the captive population being held by the Service at the Dexter National Fish Hatchery. This species exhibits wide ecological characteristics: (1) it feeds mostly on the bottom, but also at the surface and at other levels in the water column; (2) based on consistent occurrence of small specimens, it apparently breeds during most months of the year; (3) it spawns in areas of flowing water as well as stagnant ponds; and (4) it can survive and reproduce in both stenothermal spring outflows and in eurythermal pools.

dry in 1955. Human alteration of the system of artesian springs near Balmorhea began in the early 1900's. The pupfish is sparse in most of the canal system, concentrated into certain optimal or permanent water reaches (up to 200 young-of-the-year and adults in single seine hauls).

Plan Addresses Threats

In addition to habitat loss from declining springflow and reduced surface waters, competition with introduced species and degradation of genetic integrity caused by hybridization with introduced congeners are also threats to the species. The recovery plan addresses these problems, outlining ways to improve the quality of presently occupied habitat, to increase the quantity of suitable habitat, and to establish a sound management program.

The existing Commanche Springs

pupfish habitat is principally in private ownership, and proposed improvements must first consider the owners' needs. Construction of a pupfish refugium canal through Balmorhea State Recreation Area has been very successful in producing *C. elegans*, and a second canal through a dry portion of Phantom Lake is recommended by the Plan as a method of expanding existing habitat. The refugium canal would empty water back into the present irrigation canal and thus not reduce the natural flow to the irrigation system.

Effective management of the area will depend on cooperative management agreements with the private landowners and government agencies involved in land ownership. Many diverse interests will have to be consulted in the development and implementation of any comprehensive management plan.

Continued on page 3



Photo by James E. Johnson

Cyprinodon elegans survives in the irrigation canal system pictured above which is located near Phantom Cave.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of September:

Region 1—One of the six bald eagles (*Haliaeetus leucocephalus*) transferred

this year from Washington to Santa Catalina Island, California, was found shot. Each of the eagles had been fitted with radio transmitters—the dead bird was located through the radio signal which led researchers to a dumping area on the island. The remaining five birds,

along with the five out of six eagles translocated in 1980, bring the total number of eagles on the island to ten. A transmitter signal from one of the 1980 birds was recorded near the mainland; neither the bird nor the transmitter has since been found.

The Service has awarded a contract to J. L. Dobbins and Associates to map potential California southern sea otter (*Enhydra lutris nereis*) habitat on the west coast. The maps will be used by Federal and State agencies to implement the Southern Sea Otter Recovery Plan which is now in the agency review draft stage. The maps will include the location of kelp beds and traffic lanes of petroleum carriers—information which could also be helpful for fisheries and other Federal and State programs.

Region 2—Recovery teams were formed to direct the preparation of recovery plans for plant species in Arizona, New Mexico, and Texas which are listed under the Endangered Species Act of 1973. These teams will serve as advisory/review boards; the actual plan preparation will be accomplished by scientists under contract to the Service.

The MEX-U.S. Gulf meeting, attended by members of the Fish and Wildlife Service, National Marine Fisheries Service, and the Mexican Fisheries Department, was held in New Orleans in early September. The group reviewed past international cooperative programs and planned future activities, placing special emphasis on sea turtle management and protection.

The Service stocked 8,100 additional razorback suckers (*Xyrauchen texanus*) in Arizona streams, bringing the total to 15,000 individuals.

The Service began moving the endangered fish species being held at Willow Beach, Arizona, in order to concentrate the entire endangered fish propagation program at the Dexter National Fish Hatchery, New Mexico.

Region 3—Endangered Species Coordinator, Jim Engel, made on-site visits with U.S. Forest Service personnel to various areas within the region to review their wildlife policies and projects. Cooperative efforts and ongoing Forest Service activities were discussed. The Forest Service has done extensive work in the region with the Kirtland's warbler (*Dendroica kirtlandii*), timber wolf (*Canis lupus*), Indiana bat (*Myotis sodalis*), bald eagle (*Haliaeetus leucocephalus*), and with plant surveys.

Region 4—Surveys are presently underway to better determine the status and distribution of the snail darter. On September 9, 1981, a Service crew was seining at approximately river mile 16 of the Paint Rock River in Alabama and found the first snail darter ever collected in that State. In a subsequent trip to the

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Paint Rock River, four more of the fish were collected from the vicinity of river mile 19. Present plans call for returning to Alabama in October for a survey of the Flint River, another Tennessee River tributary farther to the west.

In other surveys, the Tennessee Valley Authority checked the status of transplanted snail darter populations in the Hiwassee and Elk Rivers. The Hiwassee population, now about 6 years old, appears to be doing extremely well. No evidence was found of the snail darters that were stocked in the Elk River in July 1980, but additional surveying is planned for early October. Information gathered during these surveys will be used in revising the draft Snail Darter Recovery Plan, and also by the recovery team for making a recommendation relative to the species' appropriate classification under the Endangered Species Act of 1973.

Region 5—The first recorded bald eagle nest in recent history was documented in West Virginia this year. It produced two young.

The agency review draft of the Virginia Round-leaf Birch (*Betula uber*) Recovery Plan has been completed and distributed.

The Service has initiated a long-term recovery program for the Furbish lousewort (*Pedicularis furbishiae*) in an effort to establish additional populations of the species on the upper reaches of the St. John River in northern Maine.

Region 6—On the night of September 25, 1981, a black-footed ferret (*Mustela nigripes*) was killed by dogs on a ranch 11 miles southwest of Meeteetse, Wyoming, on the Greybull River. This is about 30 miles south of Cody. Prior to this recovery, the last confirmed sighting of a black-footed ferret was in Todd County, South Dakota, on March 27, 1979.

On September 15, 1981, approximately 10,000 to 12,000 greenback cutthroat trout (*Salmo clarki stomias*), hatched in 1981 at the Bozeman Cultural Development Center in Montana, were transplanted into Rocky Mountain National Park. The Park is within the fish's historic range.

On August 3, 1981, the United States District Court for Colorado issued a Memorandum Opinion And Order regarding the lawsuit brought by the Colorado River Water Conservation District and other plaintiffs against the Department of the Interior and Colorado. The Memorandum Opinion And Order ordered that summary judgment be entered for the plaintiff river districts declaring that the designation and listing of the Colorado squawfish (*Ptychocheilus lucius*) and humpback chub (*Gila cypha*) as Endangered species is invalid and void. This was based on the belief that when the two fishes were listed the Secretary of the Interior failed

to comply with the notice and public participation provisions of the Administrative Procedures Act. On August 13, the U.S. Attorney filed a Motion For Reconsideration Of Order, which included new information not previously available to the court. Since then, the plaintiffs have filed a Memorandum In Response To Motion For Reconsideration of Order and the U.S. Attorney has filed a Memorandum In Reply to Plaintiffs' Response To Motion For Reconsideration. No final judgment has been issued.

Region 7—Final results have been tabulated for peregrine falcon (*Falco peregrinus*) survey and banding efforts for 1981. Eight rivers were examined in Alaska, including the Colville, Sagavanirktok, and Kogonukuk Rivers in the range of the Arctic peregrine (*F. p. tundrius*) and the Yukon, Kuskokwim, Porcupine, Tanana, and Charlie Rivers in the range of the American peregrine (*F. p. anatum*). A total of 238 young were recorded of which 200 were banded. The upward trend exhibited by most Alaskan populations of peregrines is very encouraging. NOTE: In the August 1981 BULLETIN, we incorrectly reported news of only *F. p. tundrius*, when actually both *F. p. tundrius* and *F. p. anatum* occur in Alaska.

As reported in the August 1981 BULLETIN, 357 Aleutian Canada geese (*Branta canadensis leucopareia*) from the Patuxent and Northern Prairie Wildlife Research Centers were released last month in the western Aleutians. The Service is attempting to reestablish breeding colonies on selected fox-free release islands. A spot-check made during mid-September by Aleutian Island Refuge personnel confirmed that large numbers of geese have thus far survived the release. John Martin, refuge manager and Aleutian

Canada Goose Recovery Team leader, reported 150–250 geese flying strongly both over Alaid-Nizki, the release islands, and nearby Shemya Island. This report is favorable since it confirms that large numbers of geese are now flight capable, that they have successfully reverted to natural food, and that they are exhibiting pre-migration restlessness. It will be important to determine how many of the released birds complete the fall migration to California.

RECOVERY PLAN

Continued from page 1

The Service is maintaining a genetic stock of *C. elegans* at the Dexter National Fish Hatchery, Dexter, New Mexico. The original stock consisted of about 30 individuals from an irrigation ditch fed by Giffin Springs. The pupfish at Dexter are being held there to provide fish for reintroduction efforts should a catastrophic loss of the natural population occur, and as a stock from which research specimens may be taken without affecting the wild population. This species has done extremely well at Dexter, the population reaching tens of thousands of individuals during the summer.

The recovery plan also suggests a public information program to inform the public of the uniqueness of this species. Implementation of the recovery tasks will be initiated by the Service's Albuquerque Regional Director and carried out through the Albuquerque Regional Endangered Species Office. Further information on the Comanche Springs pupfish recovery effort can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103, (505/766-2321).



Barry Reiswig, Assistant Manager of the Aleutian Islands National Wildlife Refuge, and Teresa Mercurio, a volunteer from Anchorage, releasing Aleutian Canada geese on Alaid-Nizki Islands during August.

Photo by Michael J. Amaral

Leopard Comment Period Reopened

Because the Service has received new data on the leopard (*Panthera pardus*), the comment period on the Service's March 24, 1980, proposed rulemaking to reclassify the species in sub-Saharan Africa was reopened. The new data, a report by P. H. Hamilton on the status of the leopard in Africa, is summarized in the September 8, 1981, *Federal Register*.

Mr. Hamilton, a Kenyan citizen and recognized authority on both the leopard and cheetah in Africa, was funded by the Service to do the report. Mr. Hamilton was asked by the Service to generalize as far as possible from the Kenya data about the status of the leopard in the rest of sub-Saharan Africa. His report, entitled, "The Leopard *Panthera pardus* and Cheetah *Acinonyx jubatus* in Kenya," was submitted to the Service in August 1981.

Recommendations

Hamilton's recommendation is that the United States Government reclassify the leopard in Africa to Threatened status, but continue to insist on retaining the species on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to protect against commercial exploitation. He further recommends that the U.S. lift its present ban on the importation of leopards legitimately shot in Africa by American sport hunters. He states that the ban on importing the legitimately acquired leopard trophies has not served any useful purpose. The number of leopards involved has been relatively small and the ban, he says, runs counter to the concept of giving the leopard monetary value which will help to justify its continued existence in Africa.

Status Report

Hamilton reports that leopards have declined generally in Kenya since the 1960's, but that there is evidence that this trend has been halted and reversed now in some areas. He states in his report that he would be surprised if Kenya's leopard population numbers less than 6,000 or more than 18,000 animals. He believes that 10,000 to 12,000 is probably the closest approximation, and feels that, as a species, the leopard cannot be considered Endangered in the true meaning of the word in Kenya or in sub-Saharan Africa at the present time. He does, however, certainly be-

lieve that the leopard should be considered Threatened. The Kenyan experience, he says, has shown what can happen to an abundant leopard population within the short period of 10-years (1965-1975). The virtual elimination of leopards from North Africa and parts of southern Africa should serve, according to Hamilton, as a warning to any who believe that this species can always survive no matter what the impact of man. Hamilton feels there is no adequate system in effect to provide the needed controls and safeguards for resuming commercial trade and is, therefore, strongly opposed to resumption of any sort of commercial trade in leopard skins.

Comments and opinions made pertaining to the reclassification of the leopard in light of the Hamilton report were received by the Service until October 8, 1981. For additional information on the reasons for the species' decline and protection afforded it under CITES and the Endangered Species Act of 1973, consult the April 1980 issue of the BULLETIN.

Sea Turtle Resuscitation Procedures Finalized

The National Marine Fisheries Service (NMFS) has amended by final rule the resuscitation procedures for Threatened sea turtles (F.R. 9/2/81). This action essentially implements an earlier emergency rule effected to mitigate the loss of Threatened sea turtles (F.R. 10/7/80).

Procedures established in 1979 in 50 CFR 227.72(e)(1)(i) required fishermen to attempt resuscitation of comatose Threatened sea turtles accidentally caught in commercial fishing operations. The technique provided in the 1979 rule consisted of turning the sea turtle on its back and pumping its breast plate (plastron) by hand or foot. The final regulations add an alternative resuscitation technique—placing the turtle on its breastplate and elevating its

Endangered Species List Corrections Published

A list of 30 technical corrections to the U.S. List of Endangered and Threatened Wildlife and Plants was published by the Service (F.R. 9/30/81). These changes constitute amendments to 50 CFR, Part 17, 11 and 12.

In some instances scientific names have been updated to reflect current usage. In making these determinations, the Service relies to the extent practicable on the *International Code of Zoological Nomenclature* and the *International Code of Botanical Nomenclature*, and the scientific community. In cases in which more than one name are commonly used for a taxon, synonyms have been provided to avoid ambiguity. Historic ranges for some listed taxa have been updated.

The Service is preparing an updated version of the entire U.S. List of Endangered and Threatened Wildlife and Plants which will incorporate the revisions mentioned above. This list will be available in late November 1981 from the Publications Unit, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

hindquarter several inches for a period of up to 24-hours. The new regulations, which became effective immediately upon publication, also allow relocation of turtles to non-shrimping areas and establish a method of releasing the sea turtles from vessels.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example: (F.R. 9/4/81)—identify the month, day, and year in which the relevant notice or rulemaking was published in the *Federal Register*.

CITES Conference Report Available

A notice of availability of the official report of the United States' Representative to the third regular meeting of the conference of CITES parties held in New Delhi, India, February 25-March 8, 1981, was recently published by the Service (F.R. 9/15/81). Copies of the

report may be requested from the U.S. Fish and Wildlife Service, Wildlife Permit Office (WPO), Washington, D.C. 20240. Due to the small quantity of reports produced, requests should be limited to one copy per person or organization.

The Service's Office of the Scientific Authority (OSA)—replacing the Endangered Species Scientific Authority (ESSA)—functions as staff to the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). OSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

U.S. Voices Concern Regarding CITES Amendment

Although the U.S. seriously considered entering a reservation on the recent amendment to the CITES Appendix II which now lists all but three species of the order Psittaciformes not otherwise listed, a decision was made against this consideration (F.R. 9/4/81). Instead, the U.S. decided to inform other countries of its displeasure with the listing through diplomatic channels which was done in late August.

At the Conference of Parties in New Delhi, India, where the Psittaciformes amendment was voted on by the CITES parties, the U.S. expressed its concern about the traffic of the species and made proposals for listing a number of the species. However, the U.S. also expressed a great concern with the administrative capability of all parties to issue meaningful permits for the export of these birds, and to enforce the Convention properly in their regard. In addition, the U.S. stated its belief that the "look-alike" listing was not fully justified in many cases. (The Psittaciformes amendment was made largely on the basis of Article II, paragraph 2(B) of CITES—known as the "look-alike" provision.)

The U.S. expressed in its formal communication to the CITES parties that it chose not to enter a reservation on the amendment, believing that better ways are available to resolve the existing different points of view. Entering reservations complicates CITES administration for management authorities and enforcement officers and complicates compliance with CITES by persons involved in legitimate trade. The communication to CITES nations urged consideration of U.S. concerns in the 10-year review of the appendices called for at New Delhi and in the preparation for the fourth meeting of the Conference of parties.

Inquiry regarding the position of the U.S. public on the Psittaciformes

amendment (F.R. 4/7/81) resulted in 1,171 responses, 688 opposing a reservation and 483 requesting that the U.S. enter a reservation. For more back-

ground on the amendment and information on the U.S. decision not to take a reservation, see the September 4, 1981, *Federal Register*.

Export Findings Proposed For Appendix II Species

Proposed export findings for seven Appendix II species have been issued by the Service (F.R. 9/10/81). Please refer to the *Federal Register* cited above for the complete listing of States to which the Service has proposed to grant, or not to grant, export approval for these species.

If finalized, the proposed findings will affect the 1981-82 harvest of bobcat, lynx, river otter, Alaskan gray wolf, Alaskan brown bear, American alligator, and American ginseng, all species protected in trade by CITES. The Service's findings are based on biological data provided by the States, the existence of various State management abilities, and the criteria described in its earlier notice

of intent (F.R. 5/26/81). Comments on this proposal were received by the Service until September 25, 1981.

Two New CITES Parties

The number of nations party to CITES now totals 73. The two newest parties are the Republic of the Philippines and the Republic of Columbia whose agreements will enter into force on November 16, 1981, and November 29, 1981, respectively.

A complete list of CITES parties is printed below:

Party Nations	Date of entry into force	Party Nations	Date of entry into force
1. Argentina	4/8/81	38. Monaco	7/18/78
2. Australia	10/27/76	39. Morocco	1/14/76
3. Bahamas	9/18/79	40. Mozambique	6/23/81
4. Bolivia	10/4/79	41. Nepal	9/16/75
5. Botswana	2/12/78	42. Nicaragua	11/4/77
6. Brazil	11/4/75	43. Niger	12/7/75
7. Cameroon, United Republic of	9/3/81	44. Nigeria	7/1/75
8. Canada	7/9/75	45. Norway	10/25/76
9. Central African Republic	11/25/80	46. Pakistan	7/19/76
10. Chile	7/1/75	47. Panama	11/15/78
11. Columbia, Republic of	11/29/81	48. Papua New Guinea	3/11/76
12. Costa Rica	9/28/75	49. Paraguay	2/13/77
13. Cyprus	7/1/75	50. Peoples' Republic of China	4/8/81
14. Denmark	10/24/77	51. Peru	9/25/75
15. Ecuador	7/1/75	52. Philippines, Republic of	11/16/81
16. Egypt	4/4/78	53. Portugal	3/11/81
17. Finland	8/8/76	54. Rwandese Republic	1/18/81
18. France	8/9/78	55. Senegal	11/3/77
19. Gambia	11/24/77	56. Seychelles	5/9/77
20. German Democratic Republic	1/7/76	57. South Africa	10/13/75
21. Germany, Federal Republic of	6/20/76	58. Sri Lanka	8/2/79
22. Ghana	2/12/76	59. Suriname	2/15/81
23. Guatemala	2/5/80	60. Sweden	7/1/75
24. Guyana	8/25/77	61. Switzerland	7/1/75
25. India	10/18/76	62. Tanzania, United Republic of	2/27/80
26. Indonesia	3/28/79	63. Togo	1/21/79
27. Iran	11/1/76	64. Tunisia	7/1/75
28. Israel	3/17/80	65. Union of Soviet Socialist Republics	12/8/76
29. Italy	12/31/79	66. United Arab Emirates	7/1/75
30. Japan	11/4/80	67. United Kingdom	10/31/76
31. Jordan	3/14/79	68. United States of America	7/1/75
32. Kenya	3/13/79	69. Uruguay	7/1/75
33. Liberia	6/9/81	70. Venezuela	1/22/78
34. Liechtenstein	2/28/80	71. Zaire	10/18/76
35. Madagascar	11/18/75	72. Zambia	2/22/81
36. Malaysia	1/18/78	73. Zimbabwe	8/17/81
37. Mauritius	7/27/75		

Data Support Removing Bobcat From CITES List



Photo by Jack B. Woody

Currently 11 States list the bobcat as protected against taking and 37 States allow a regulated harvest. The above picture was taken in Nevada.

The Service announced in a preliminary notice (F.R. 9/14/81) a proposal to delist the bobcat (*Lynx rufus*) in the United States and Canada since it was inappropriately included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The notice invites comments from the public which will be considered in determining whether or not the United States should submit, by postal procedures, the proposal for CITES parties to review regarding the bobcat's removal from Appendix II.

The bobcat is found throughout much of the U.S., north to the Canadian border, crossing into British Columbia in the west and Nova Scotia in the east and south into Mexico. The degree of protection now given to the Central Mexican subspecies (*Felis rufus esculape*), which is listed in Appendix I of CITES and as Endangered under the Endangered Species Act of 1973, would not be affected by this proposal.

Background

In 1976, at the time of the First Conference of CITES Parties, criteria for listing and delisting CITES species were established. Many species had been placed on the appendices prior to this meeting, however, without having the appropriate supporting evidence which the criteria (Berne, 1976) later called for. The bobcat is among the species listed in this manner.

Inclusion of the bobcat on Appendix II occurred when the parties adopted a

proposal to list all Felidae on Appendix II except those already listed on Appendix I and the common house cat (*Felis catus*). Since the U.S. generally opposes the taking of reservations on any species, it refrained from doing so in this case.

In 1979, the parties adopted a resolution to allow the correction of this situation involving species which have been included on Appendices I and II without having the appropriate supporting data. In an attempt to strengthen the scientific validity of the appendices, the parties decided that species included on Appendices I and II prior to the First Conference of Parties may be proposed for deletion or for transfer from Appendix I to Appendix II, or vice versa, "if a careful review of all available information on the status of the species does not lead to the conclusion that the species would be eligible for retention in its present appendix under the adopted criteria."

Status of Bobcat

Since 1976, all of the States which allow a bobcat harvest have taken positive steps to determine the status of their respective bobcat populations. At least 5 years of harvest data and population information have been gathered on a national basis. From these studies, it is evident that the bobcat is not a currently threatened or a potentially threatened species. It is further evident that removal of this species from Appendix II will have little adverse effect on its survival or on the effectiveness of CITES in

Section 6 Funds Cease; State Program Summarized

September 30, the final day of fiscal year 1981, also marked the end of a 5 year grant-in-aid program under Section 6 of the Endangered Species Act of 1973. Termination of this program to assist States in endangered species conservation efforts was effected by Congress as part of the 1982 budget-trimming procedures. A summary of the program is contained in the following text and accompanying chart.

Nearly \$24 million in matching Federal funds was given over the 5 year period to 38 States having Cooperative Agreements with the Fish and Wildlife Service. These dollars were spent on 88 federally listed species and 173 State listed or candidate species. The federal listed species included 17 mammals, 17 birds, 12 reptiles, 3 amphibians, 10 fish, 19 mollusks, and 10 arthropods (insects and crustaceans). The \$11.8 million invested for federally listed species was distributed as follows: 46 percent of the funds were for birds, 23 percent for mammals, 15 percent for reptiles and amphibians, 8 percent for fish, 4 percent for invertebrates (mollusks and insects), and 1 percent for plant surveys. The balance of the grant funds were utilized for State listed species, law enforcement, educational efforts, endangered species surveys, and program planning and administration.

In terms of funds allocated, the 10 top species were 1) peregrine falcon, 2) bald eagle, 3) Kirtland's warbler, 4) blunt-nosed leopard lizard, 5) West Indian manatee, 6) Indiana bat, 7) southern sea otter, 8) American alligator, 9) red-cockaded woodpecker, and 10) loggerhead turtle. The 88 federally listed species which were assisted by the Program are listed in the accompanying chart, along with the amount of funds allocated for them and the States carrying out the projects.

controlling international trade in other Felidae.

Following the inclusion of all Felidae species in Appendix II of CITES, all States allowing a harvest of bobcats have had to meet standards set up by the U.S. Scientific Authority in order to export bobcat pelts. These criteria require the States annually to furnish harvest figures (numbers taken, number of trappers, and prices paid for pelts), population estimates and trends, habitat assessment (trends), and management plans. Population estimates arrived at by the various States having bobcats in-

Continued on page 8

ENDANGERED SPECIES GRANTS

For Federal Listed Species

Species	Federal Funds (\$1, 000's)	States	Species	Federal Funds (\$1, 000's)	States
MAMMALS			REPTILES (con.)		
Indiana bat	443.1	AR, IA, MA, MD, MI, MO, NJ, NY, VA, WI	Loggerhead sea turtle	349.6	FL, GA, NC, SC
Gray bat	31.1	AR, MO	Leatherback sea turtle	19.0	VI
Ozark big-eared bat	11.7	AR, MO	Blunt-nosed leopard lizard	556.0	CA
Grizzly bear	60.0	CO, ID, WY	Island night lizard	25.1	CA
Black-footed ferret	124.2	CO, NB, NM, SD, UT, WY	Atlantic saltmarsh snake	7.1	FL
Southern sea otter	410.0	CA	San Francisco garter snake	55.9	CA
Gray wolf	127.8	ID, MI, MN, NM, NY, WI, WY	Eastern indigo snake	66.3	FL, GA
San Joaquin kit fox	188.8	CA	TOTAL	1, 614.4	
Florida panther	97.7	FL	AMPHIBIANS		
Eastern cougar	66.6	AR, GA, NY, VA	Desert slender salamander	55.9	CA
Delmarva fox squirrel	137.4	DE, MD, VA	Santa Cruz long-toed salamander	55.9	CA
Utah prairie dog	23.3	UT	Pine barrens treefrog	23.5	FL, NJ, SC
Morro Bay kangaroo rat	226.0	CA	TOTAL	135.5	
Salt marsh harvest mouse	18.2	CA	FISH		
West Indian manatee	518.9	FL	Greenback cutthroat	108.1	CO
Columbian white-tailed deer	109.2	WA	Humpback chub	67.2	CO, UT, WY
Key deer	2.0	FL	Bonytail Chub	5.7	UT
TOTAL	2, 596.0		Mohave chub	135.9	CA
BIRDS			Woundfin	7.5	UT
Aleutian Canada goose	49.6	CA	Colorado River squawfish	310.1	CA, CO, UT
Brown pelican	213.2	FL, NC, SC, VA, VI, CA	Owens pupfish	195.9	CA
California condor	185.1	CA	Tecopa pupfish	43.0	CA
Everglade kite	23.5	FL	Okaloosa darter	44.9	FL
Bald eagle	1,468.5	CA, CO, DE, FL, GA, ID, IL, KS, MA, MD, ME, MI, MN, MT, NB, NH, NJ, NM, NY, PA, RI, SC, TN, UT, VA, WA, WI	Unarmored three-spine stickleback	55.9	CA
Peregrine falcon	1, 859.8	CA, CO, FL, GA, ID, MA, MD, MI, MT, NB, NJ, NM, NY, PA, RI, SC, SD, TN, UT, VA, WA	TOTAL	974.2	
San Clemente loggerhead shrike	18.2	CA	INVERTEBRATES		
Whooping crane	59.6	CO, FL, KS, NB	Mollusks		
California clapper rail	22.6	CA	Chittenango ovate amber snail	18.3	NY
Yuma clapper rail	16.1	CA	Iowa pleistocene snail	8.6	IA
Light-footed clapper rail	45.5	CA	Curtis pearly mussel	34.0	MO
California least tern	73.1	CA	Fresh water mussels (16 species)	141.0	TN, VA, WI
Red-cockaded woodpecker	369.4	AR, FL, GA, MD, NC, TN, VA	TOTAL	201.9	
Kirtland's warbler	874.6	FL, MI, WI	Arthropods		
Reed Warbler	32.5	GU	El Segundo blue butterfly	37.3	CA
San Clemente sage sparrow	18.6	CA	Lotis blue butterfly	37.3	CA
Dusky seaside sparrow	103.0	FL	Mission blue butterfly	37.3	CA
TOTAL	5,432.9		Smith's blue butterfly	37.3	CA
REPTILES			Palos Verdes blue butterfly	12.9	CA
American crocodile	34.2	FL	Lange's metalmark butterfly	37.3	CA
American alligator	422.9	AR, FL, GA, NC, SC	San Bruno elfin butterfly	37.3	CA
Plymouth red-bellied turtle	14.9	MA	Kern primrose sphinx moth	12.9	CA
Green sea turtle	43.2	FL	Valley elderberry longhorn beetle	12.9	CA
Hawksbill sea turtle	20.2	VI	Delta ground beetle	12.9	CA
			TOTAL	275.4	
			PLANTS		
			Plant Surveys	482.4	CA, CO, GA, OH, RI, SC, WA, WY
			TOTAL	11, 713.3	

BOBCAT

Continued from page 6

dicate that currently there are between 725,000 and 1,020,000 bobcats with a mean of 871,000 in the Continental U.S.

Many States have management plans to annually harvest 10 to 20 percent of the bobcat population. Few exceed this percentage in actual take. In the past 5 years, the annual take of bobcats has averaged 91,000—or less than 10 percent of the calculated available population.

Trade Status and Protection

While trappers take bobcats primarily for the fur trade, which is largely an export market, hunters shoot them for sport and do not regularly sell the pelts. (In addition to commercial and sport harvests, a number of animals are removed annually because of their threat to livestock and poultry.) Available data show that in many States, approximately 55 percent of the bobcats harvested are taken by trappers and 45 percent by hunters. Around 45 percent of the bobcat pelts harvested are exported annually. Therefore, it appears that, even without regulation by CITES, bobcats probably would continue to be harvested in many States at nearly the present level.

Even with the tremendous rise in fur prices, especially in 1978–79, the harvest of bobcats and the numbers of pelts exported did not rise significantly. This is probably because only prime pelts are utilized in trade and the number required by the European market is limited.

Before 1976, the bobcat was listed as a predator by many States which paid a bounty for their removal; few States had closed seasons or management plans for the species. Now, no State pays a bounty and all States manage the bobcat as a game animal, furbearer, or pro-

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	23	756

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 17 animals
8 plants

Number of Critical Habitats listed: 50

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 41

Number of Cooperative Agreements signed with States:
38 fish & wildlife
10 plants

September 30, 1981

tected species. Currently (1980–81 season) 11 States list the bobcat as protected against taking and 37 States allow a regulated harvest. All States allowing a bobcat harvest have the population data and the management ability needed to regulate that harvest by means of seasons, bag limits, and mandatory tagging and reporting.

Since each State that allows a bobcat harvest has established a management program for the species, the Service finds there is no biological basis for establishing additional legal protection. Approximately 55 percent of the U.S. bobcat harvest is utilized within the U.S. and the elimination of CITES export requirements would have little impact on the current or future harvest of species.

The lynx is the only animal whose pelt might be mistaken for that of a bobcat. While somewhat similar in appearance to the Canadian lynx (*Lynx canadensis*), the bobcat differs from it and is sufficiently distinct so that there is no reasonable need to regulate bobcat exports in order to effectively control trade in lynx or other species of cats.

The Service will consider all information and comments received by November 13, 1981, in determining whether it should submit the proposal to the party nations. Correspondence concerning the September 14, 1981, notice should be sent to the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240. (202/653-5948).

October 1981

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Service Approves Two More Recovery Plans—Okaloosa Darter / St. Croix Population Of Leatherback Turtle

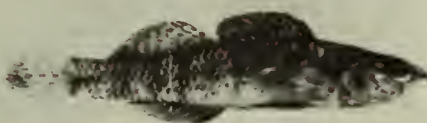
On October 23, 1981, the Service's Director approved recovery plans for the St. Croix population of the leatherback sea turtle (*Dermochelys coriacea*) and the Okaloosa darter (*Etheostoma okaloosae*), bringing the total of approved final plans to 44. The Service anticipates the completion of at least 40 more plans during fiscal year 1982.

Leatherback Turtle

The recovery plan for the leatherback turtle focuses on the nesting population of leatherback turtles of St. Croix, Virgin Islands, the only portion of the species' habitat under United States' management. The scope of the plan is further limited, addressing the needs of the species while on land only. (A memorandum of understanding between the U.S. Fish and Wildlife Service (FWS) and Commerce's National Marine Fisheries Service (NMFS) gives jurisdiction over sea turtles to FWS when they are

on land and to NMFS while they are at sea.)

The main objective of the recovery plan is to maintain and increase the St. Croix population of the leatherback by protecting the turtles and their nesting habitat. The first critical step called for in the plan is the protection of the Sandy Point beach site. Sandy Point, which has an estimated 95 nests per year, includes more nesting habitat than the other St. Croix beaches combined. The plan recommends acquisition of this site as a wildlife refuge.



Habitat deterioration and loss threaten the Okaloosa darter.

The greatest threat to the St. Croix population is the development of Sandy
Continued on page 3

Permit Office Schedules Wildlife Regulation Workshops

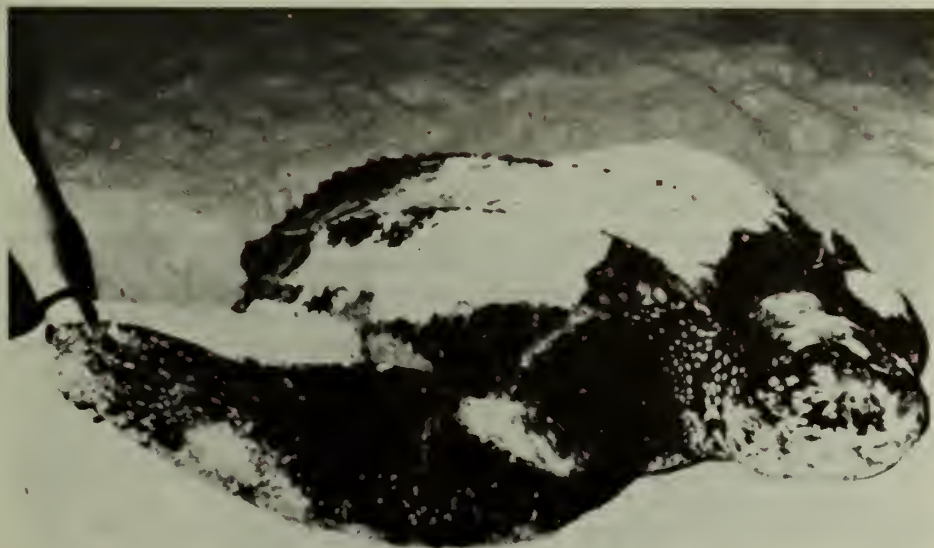
The Service's Federal Wildlife Permit Office (WPO) wishes to notify the public that it intends to conduct three 2-day workshops during January 1982. The first will be in Los Angeles on January 14-15, the second in Miami on January 19-20, and the third in New York on January 26-27. A consolidated 1-day session will be held in Washington, D.C. on January 7. Times and locations of the workshops will be announced later.

The purpose of the workshops will be to acquaint members of the business community who are affected by wildlife permit requirements with the regulatory sources, and to assist them in complying with wildlife regulations which are administered by WPO. There will be ample opportunity for discussions, comments and suggestions will be sought from the business community regarding the permit process itself.

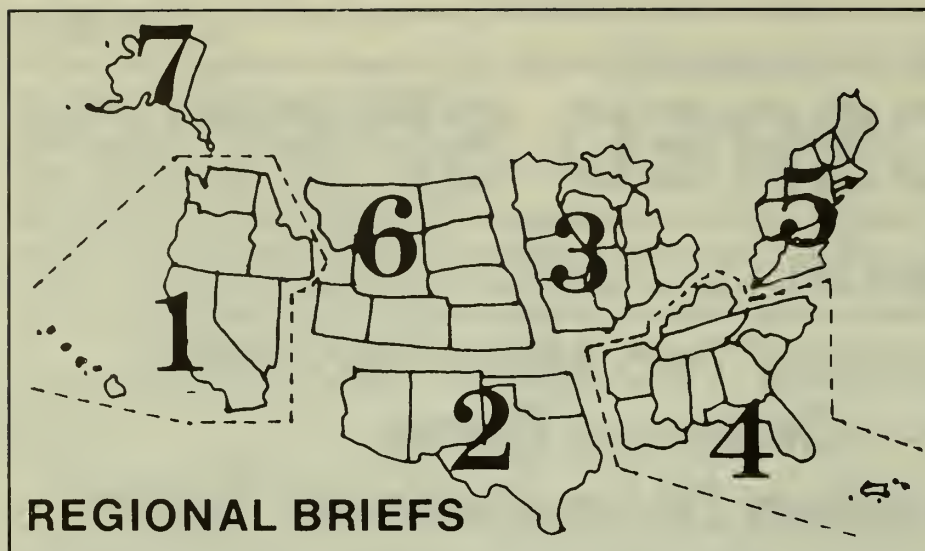
Each workshop will be conducted by a team of WPO staff members. The first day of the workshop will be for the public and the second day will be for State and Federal government personnel. A fee of \$25.00 per person will be charged for the public sessions of the workshop. (The authority for this charge is found in Section 11 of the Endangered Species Act of 1973, as amended.)

Photo by M. F. Mettee

Photo by National Marine Fisheries Service



A leatherback turtle on Sandy Point beach, St. Croix, Virgin Islands.



Endangered Species Program regional staffers have reported the following activities for the month of October:

Region 1—A Memorandum of Understanding (MOU) has been initiated be-

tween the Fish and Wildlife Service and the Department of Energy to promote the conservation of Beatley's milkvetch (*Astragalus beatleyae*). The only known remaining colony of this plant is on the Nevada Test Site. Two or three addi-

tional MOU's are being planned to assist with the conservation of other endangered species in Region 1.

Region 2—Jack Woody, Endangered Species Specialist, represented the Service regarding endangered species projects at the annual meeting of the U.S.-Mexico Joint Committee on wildlife conservation in Caliacan, Mexico, October 7-11. Thirteen endangered species sub-projects were approved.

A one year contract for a status survey on the ocelot (*Felis pardalis*) in south Texas was awarded to Dr. Daniel D. Everett, Texas A & I University, Kingsville. The purpose of the survey is to gather basic ecological information and to better define the degree of threat to the species.

The Wild Canid Survival and Research Center in St. Louis, Missouri, has become an active participant in the Service's red wolf (*Canis rufus*) recovery program. The Center, under the direction of Dr. Marlin Perkins, received its first pair of red wolves the week of October 19-23. They are being kept in a large secluded pen at the Center's wolf sanctuary. The Center will be conducting behavior studies on the wolves as well as attempting to breed the animals.

Over 200 peregrine falcons (*Falco peregrinus*) were trapped and banded on Padre Island along the Texas coast during their fall migrations as a part of the continuing migration and population studies.

The New Mexico Department of Game and Fish signed an MOU with the Service to cooperatively attempt to re-establish the razorback sucker (*Xyrauchen texanus*) in the San Juan River in northwestern New Mexico.

Twenty-six thousand eight hundred young bonytail chubs (*Gila elegans*) were stocked into Lake Mohave on October 19 in cooperation with the Arizona and Nevada Game and Fish Departments. This stocking was to supplement an existing, but tenuous population. This may be the only remaining pure population of the species in the world.

Service Special Agents apprehended an oil rig supply boat crew which had killed and butchered a loggerhead sea turtle (*Caretta caretta*) off the Texas coast. To date, two individuals have been fined \$1,000 each and given a 6-month suspended jail term. The turtle was taken with a bow and arrow.

Region 4—Status surveys have been approved for the following species: Cahaba shiner (*Notropis* sp.), goldline darter (*Percina aurolineata*), amber darter (*Percina antesella*), trispot darter (*Etheostoma trisella*), smoky madtom (*Noturus baileyi*), Alabama red-bellied turtle (*Pseudemys alabamensis*), Florida torreyia (*Torreyia taxifolia*), and Flori-

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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da yew (*Taxus floridana*). A habitat survey has also been approved for the Florida sand scrub community in which 26 candidate species occur.

The Jacksonville Area Office was recently notified that a manatee radio transmitter found on the beach of Sanibel Island was brought to J.N. "Ding" Darling National Wildlife Refuge personnel. This is the first time that a lost manatee transmitter has been recovered.

The radioed manatee (No. 208m) was originally tagged in Magnolia Spring within Spring O'Paradise Canal, Crystal River, Citrus County, Florida, on January 31, 1980; it left the tagging area on March 5, 1980. It is presumed that the manatee swam in the vicinity of Sanibel Island (over 200 miles from Magnolia Spring) where the transmitter was found. Researchers again observed it in the Crystal River area during the winter of 1980-81 without its transmitter. The transmitter was held by the Refuge until identified and then sent to Dr. Galen Rathbun, Denver Wildlife Research Center, Gainesville, Florida.

Manatee transmitters are encased in a padded collar fastened around the manatee peduncle (the narrow constriction anterior to the tail) by a buckle with corrodible pins designed to last approximately 1 year, the estimated life of the transmitter.

A leatherback sea turtle tagged on May 5, 1981, on Sandy Point, St. Croix, Virgin Islands was found dead September 11, 1981, on a beach at Atlantic City, New Jersey. It was one of 19 leatherbacks tagged at Sandy Point this year.

Merritt Island National Wildlife Refuge personnel have continued to observe and receive periodic reports of young loggerhead sea turtles (probably hatchlings of the year) being washed ashore in rafts of algae and seaweed during periods of high tides accompanied by strong easterly winds.

Region 5—West Virginia has been determined eligible to enter into a Cooperative Agreement under Section 6 of the Endangered Species Act of 1973. The State has been notified.

A survey of selected waterfalls in New York State for additional populations of the Chittenango ovate amber snail (*Succinea chittenangoensis*) was recently completed by recovery team leader Patricia Riexinger, New York State Department of Environmental Conservation, and a Region 5 representative. During the course of the survey, shells were collected and habitat parameters recorded. Identification of collected shells is underway.

This survey was a followup to the one planned and conducted by personnel of Region 5, New York State Department of Environmental Conservation, and

others in August of this year on the Tennessee-North Carolina border (See Regional Briefs, September 1981 BULLETIN). Species collected on that survey appear almost certainly to be the Chittenango ovate amber snail.

All 21 eagles which were transplanted from Alaska in mid-July by the New York State Department of Environmental Conservation have successfully fledged. The eagles were held at Oak Orchard Wildlife Management Area in Genesee County, western New York. For earlier "briefs" on this project see the June and August 1981 issues of the BULLETIN.

Regions 6 and 2—The Canadian Wildlife Service, the U.S. Fish and Wildlife Service, and involved States are participating in a whooping crane (*Grus americana*) tracking program to determine what habitat is utilized by the migrating birds between Canada's Wood Buffalo National Park and Aransas National Wildlife Refuge in Texas. By means of radio transmitters which were attached to the three known chicks produced this year at Wood Buffalo, Canadian Wildlife Service and U.S. Fish and Wildlife Service air and ground crews are following the cranes. Detailed habitat analysis is being conducted wherever the birds land. The first chick to leave died after it flew into a power line in south central Canada. (This is the second whooping crane loss from crane/powerline collisions this year—an adult crane died from striking a powerline in Montana.) At the time of this writing, a second chick had been successfully tracked to northern Texas. Based on similar tracking studies done on sandhill cranes, it is believed that this

WATS Western Atlantic Turtle Symposium—

A "Symposium on Sea Turtle Research of the Western Central Atlantic (Populations and Socio-Economics)" will be sponsored by the Intergovernmental Oceanographic Commission Association for the Caribbean and Adjacent Regions (IOCARIBE) in cooperation with the FAO/ UNDP Western Central Atlantic Fisheries Project (WECAF). It is scheduled for July 1983 in San José, Costa Rica. For further information contact: Dr. Robert R. Lankford, IOC Assistant Secretary for IOCARIBE, c/o UNDP, Apartado 4540 4540, San José, Costa Rica (Telephone: 24-92-94) or Mr. Frederick H. Berry, Secretary to the WATS, National Marine Fisheries Service, 75 Virginia Beach Drive, Miami, Florida 33149, U.S.A. (Telephone: 305/ 361-4276).

study can dramatically advance our understanding of the biology of the whooping crane.

Overall, this has been an unusually poor year for the whooping crane. The three chicks which fledged at Wood Buffalo represent this year's total production. No chicks were produced at Grays Lake National Wildlife Refuge in Idaho. Severe drought appears to be the major cause of the Grays Lake nesting failures.

Wildfires have burned over 70% of the whooping crane nesting area at Wood Buffalo. It is too early to predict what the impact will be, if any, on next year's nesting success.

OKALOOSA DARTER

Continued from page 1

Point beach. The area is zoned W-1 (Waterfront Pleasure), which allows residential dwellings, retail shops, restaurants, marinas and similar types of development. Presently the beach is a relatively isolated area with some swimming and fishing activity. Sand mining also occurs, but only above the dune line.

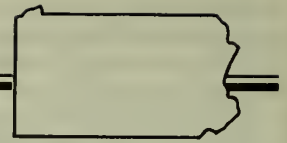
Since the mid-1970's, efforts have been made by the Virgin Island Bureau of Fish and Wildlife and Environmental Enforcement, the U.S. Fish and Wildlife Service, and the U.S. National Marine Fisheries Service to patrol the area of Sandy Point, count nests, tag turtles, rescue disoriented hatchlings, and apprehend persons found disturbing the animals and their nests. Unfortunately these efforts have been inconsistent from year to year. It is the intention of the Service, through implementation of the newly approved recovery plan, to develop a consistent recovery strategy and thereby guarantee the future of this population. Tagging programs, beach patrols, and relocation of nests threatened by beach erosion are recovery actions recommended by the plan.

Okaloosa Darter

The Okaloosa Darter Recovery Plan was prepared by the Okaloosa Darter Recovery Team which includes members from Eglin Air Force Base, the Florida Game and Freshwater Fish Commission, the Alabama Geological Survey, the Florida State University and the U.S. Fish and Wildlife Service. The Okaloosa darter is endemic to six Choctawhatchee Bay tributaries in Okaloosa and Walton counties, north-west Florida.

Okaloosa darter habitat lies within approximately 113,000 acres of watershed. All but approximately 12,000 acres (which are privately owned) are within Eglin Air Force Base. The darter

Continued on page 11



Pennsylvania Species of Special Concern

The official responsibility for managing Pennsylvania's wildlife resources is shared by three separate State agencies, the Pennsylvania Game Commission (PGC), the Pennsylvania Fish Commission (PFC), and the Pennsylvania Department of Environmental Resources (DER). The PGC and PFC currently have responsibilities for the conservation of endangered wildlife within the various taxonomic groups which they manage. Pending legislation hopefully will soon give the DER responsibility for the management of endangered wild plants.

The Game Commission

The PGC, which is responsible for the management of birds and mammals in the State, began its endangered species work in the summer of 1978—the beginning of nongame management, as such, for the agency. The first objective of the nongame project, which was coordinated by Michael J. Puglisi, was the development of State endangered bird and mammal lists. Dr. Frank Gill of the Academy of Natural Sciences formed and chaired a committee to develop a State endangered bird list. Dr. Hugh Genoways of the Carnegie Museum of Natural History did the same for State endangered mammals. During the two years that it took to develop these lists, several other projects were initiated.

Indiana Bat Colony

During the winter of 1978–1979, PGC contracted with Dr. John A. Hall of Albright College to conduct a Statewide search for remaining colonies of the Indiana bat (*Myotis sodalis*). During November 1978, Dr. Hall visited a cave which he felt to be the most promising of bat habitats in the State, only to discover that it had been recently bulldozed shut. With the help of PGC and the U.S. Fish and Wildlife Service, the cave was reopened just before the onset of freezing weather. One year later, five Indiana bats were located in this cave; the following year (1980) 100–150 individuals were found there. This increased number, however, was still considerably fewer than the 1,000 bats which Dr. Hall estimated hibernated there in 1965. The cave was gated in

1979 in order to reduce human disturbance of the colony. Management of the bats includes a check of the hibernating population every second year.

Bald Eagle Population

Perhaps the PGC's biggest success has been with its small resident population of bald eagles (*Haliaeetus leucocephalus*). When work on the bald eagle began in the spring of 1979, there were only three bald eagle nests in Pennsylvania and recent production had been quite poor—only six eaglets had been hatched from the three nests in the previous five years. As an initial effort, the PGC introduced a single eaglet to the nest of an unsuccessful pair—this was the only eagle to fledge in Pennsylvania in 1979.

Despite the poor production during 1979, nest monitoring had a valuable side benefit. Observations made during and after the 1979 nesting season, and an examination of past nesting success led PGC personnel to suspect human disturbance of the nests as contributive to reproductive failure. During the 1980 nesting season, therefore, nest disturbance was reduced as much as possible. Record production was the result. Four eaglets hatched (more than had been produced by three nests during any of the previous 20 years) and all three nests produced young (a first in 20 years of records). All four eaglets fledged.

A fourth nest was discovered during the 1981 nesting season and it, along with the other three nests, were pro-



Game Protectors, Dave Myers and Bob Lamadue, banding a nestling eagle.



Photo by Paul G. Wiegman/Western Pennsylvania Conservancy

The majority of bog turtle (*Clemmys muhlenbergi*) habitat in Pennsylvania is privately owned. Informal agreements to maintain suitable habitat have been made with owners of two recently discovered localities.

tected from disturbance. The 1981 production matched that of 1980; four eaglets were produced from three of the four nests and a fifth eaglet was introduced to the unsuccessful nest. All five birds fledged. The record production during the 1980 and 1981 nesting seasons is a strong indication that the elimination of human disturbance has solved the bald eagle's biggest problem in Pennsylvania.

Peregrine Falcon Releases

Peregrine falcons (*Falco peregrinus*) were hacked from two Pennsylvania sites in 1976 and 1978 by the Peregrine Fund. Neither of the releases could be considered truly successful, however, and for three years activities were suspended by the Fund. After successes with northeastern coastal and urban peregrine hack sites, the Peregrine Fund returned to Pennsylvania in 1981. With the assistance of PGC and the Academy of Natural Sciences, the Fund set up a hack site on a prominent building in center-city Philadelphia from which four peregrines were fledged. An unidentified sub-adult female peregrine added some excitement to the event, appearing four days after the first young peregrine fledged and harassing the younger birds. Its aggressive behavior fortunately subsided without causing

any serious problem—at least three of the four released birds successfully dispersed. The Fund and PGC may set up several gravel boxes near the hack site to encourage the sub-adult female to nest in the area next year.

Osprey Hacking Program

Results of a PGC questionnaire survey of its field personnel during 1978 indicated that there were approximately 100 summer resident ospreys (*Pandion haliaetus*) in Pennsylvania, including between 6–14 nesting pairs. Subsequent studies have revealed that, actually no ospreys nest in Pennsylvania but that they apparently move into the State during mid-April and remain throughout the summer. The presence of pairs of ospreys at a given site during spring and summer led to the mistaken, though reasonable, assumption that the birds were nesting. The realization that the osprey had been eliminated from Pennsylvania as a nesting bird led to the development of a pilot osprey hacking program developed by Charles Schaadt and Dr. Larry Ryman of East Stroudsburg, State College.

Initially, six 4-week-old ospreys (three from Maryland and three from Virginia) were hacked; all six birds fledged, though one was later lost to predation. Having had this success, a 5-year os-

prey hacking program was approved. The program is unique in that it is being funded jointly through the PGC's "Working Together for Wildlife" program (a program of fund raising through the sale of special patches and decals) and through contributions from State chapters of the National Audubon Society. Schaadt and Ryman propose to release 108 ospreys over a 6-year period and, hopefully, to reestablish the osprey in Pennsylvania. (The osprey is not protected by the Endangered Species Act of 1973).

PGC has also funded river otter (*Lutra canadensis*) research, conducted an aerial photo search for potential Delmarva fox squirrel (*Sciurus niger cinereus*) reintroduction sites and has investigated reported mountain lion (*Felis concolor*) sightings. The mountain lion work was conducted with considerable volunteer assistance from Hellen McGinnis, a wildlife biologist with background in both wildlife management and paleontology. Concrete evidence of mountain lions in the State has not yet been found. PGC has attempted to increase public involvement of and support for nongame wildlife work through news releases, various articles in periodicals and newspapers, radio and television interviews, and through public appearances.

The Fish Commission

The Pennsylvania Legislature gave the PFC authority to manage the State's fish, amphibians, reptiles, and other "aquatic organisms" in 1974. Subsequently, matters relating to the conservation of endangered species within these taxonomic groups were assigned to various individuals until 1977 when Mr. Clark Shiffer was selected as Herpetology and Endangered Species Coordinator. Being in need of outside expertise and guidance, the PFC organized two formal advisory committees, a Herpetology Advisory Committee chaired by Dr. C. J. McCoy, and an Advisory Committee on Fishes. These two groups developed State lists of endangered fish, reptiles, and amphibians.

In 1979, the PFC embarked upon a 5-year endangered species plan. Initial accomplishments called for by the plan include the development of a manuscript by Dr. McCoy, under contract to PFC, which collates all available data on Pennsylvania's endangered reptiles and amphibians. This data will be published in early 1982 as a "Distributional and Bibliographic Inventory of Amphibians and Reptiles in Pennsylvania." Another aspect of the 5-year plan called for species surveys and habitat evaluation. Studies on two State-listed species, the bog turtle (*Clemmys muhlenburgi*) and the green salamander (*Aneides aeneus*), were conducted by Mr. Shiffer.

Fifteen historic bog turtle sites were visited and, although no turtles were seen, all but two sites appeared suitable for the occurrence of this species. Bog turtles were found at two out of four additional sites which Shiffer also visited; the other two sites appeared suitable for the species. Since the majority of historic and new locations for this species are

on private land, landowner cooperation is essential for the maintenance of suitable habitat conditions. Discussions with landowners at the two new localities resulted in informal agreements to maintain the habitats in a condition necessary for the turtle's continued survival.

The only historic site in Pennsylvania for the green salamander was visited, but no individuals were found. A quarrying operation on the west slope of Wmp's Gap, Franklin County, where individuals of the species were last taken, may pose some threat to its existence. Moist rock with suitable crevices still exist, however. More thorough searching for the species in this area may reveal the presence of individuals. This site represents the northern-most occurrence of the species' range.

Other State-Listed Species

Most historic localities of the red-bellied turtle (*Chrysemys rubriventris*) are in the southeastern portion of the State. John Groves of the Philadelphia Zoo, who is also a member of the Herpetology Advisory Committee, has monitored the status of this species for some time and has confirmed its existence at the new localities recently reported by State law enforcement personnel.

Prior to the inception of the State's 5-year project, a study of the ecology and morphological variation of the massasauga (*Sistrurus catenatus*) had been done by Howard Reinert as a graduate degree project at Clarion State College. This work, as well as the special report on this small rattlesnake's historic and current distribution, which was coauthored by Dr. William Kodrich, also of Clarion State College, have been of immense importance to the State's understanding of the status and requirements of the species.

Reinert is presently conducting a study of niche separation in the timber rattlesnake (*Crotalus horridus*) and the copperhead (*Agkistrodon contortrix mokeson*) at Hawk Mountain Sanctuary, Berks County, Pennsylvania. The PFC lists the timber rattlesnake as status indeterminate; Reinert's work will assist in making decisions concerning its management by the State.

PFC is currently contracting to obtain complete historical data on State fish. Additionally, it is increasing its public education efforts and is seeking additional funding through pending State legislation.

Pennsylvania was the first State to cooperate with the U.S. Fish and Wildlife Service in endangered species training programs. State law enforcement officers from both PGC and PFC participated in 3-day workshops conducted by the Service on various aspects of endangered species philosophy, identification and law enforcement activities. More workshops are planned for 1982.

Pennsylvania's Plant Program

Pennsylvania presently does not have endangered plant legislation or an agency specifically responsible for plant protection. A bill entitled "The Wild Resource Conservation Act," which is currently being considered by the Pennsylvania Legislature, would place responsibility for endangered plants with the Department of Environmental Resources.

Since Pennsylvania did not have its own plant conservation authority, the Service contracted in 1978 with the Western Pennsylvania Conservancy, a private non-profit organization, to prepare an Endangered Plant Status Report for the State. Under the direction of Mr. Paul G. Wiegman, and with the assistance of professional botanists and interested amateurs, the Conservancy completed the report. It was published by the Service in early 1980.

The 1980 Plant Status Report prepared the foundations for a proposed list of State extirpated, endangered, threatened and vulnerable wild plants. The Conservancy continues to refine the proposed State plant lists and to review the present status of plants which it includes. Herbarium searches, field visits to recorded sites, and searches for new habitats and locations are being done through the Pennsylvania Natural Diversity Inventory (PNDI), a Conservancy project.

A primary purpose of the PNDI is to review the historic and present status of all species on the proposed State lists of plants and animals and to store the

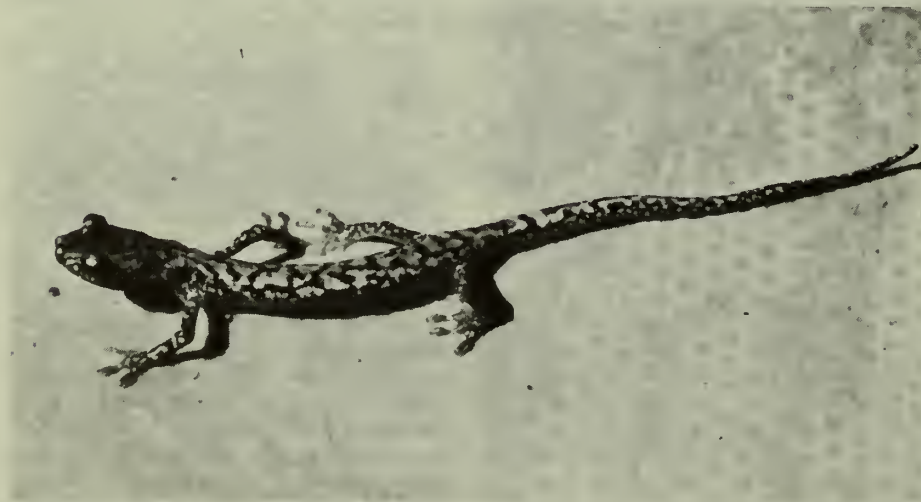


Photo by C. Kenneth Dodd, Jr.

Suitable habitat for the green salamander remains at its single historic site in Pennsylvania. No individuals were seen there during a recent visit, however.

pertinent data in a computerized system. Once the system is completed, individual species location, field status, and life history data will be available in an objective and timely format to public and private planners and resource managers. Assisting in the PNDI is the Pennsylvania Department of Environmental Resources, Bureau of Forestry, and Bureau of Environmental Master Planning.

Habitat Acquisition/Preservation

Western Pennsylvania Conservancy and other private conservation organizations have been active in the acquisition of both endangered plant and animal habitats throughout Pennsylvania. In 1979 the Western Pennsylvania Conservancy acquired a 100 acre tract of mature forest in Butler County containing a number of State listed plant species. The bald eagle nest site discovered in 1981 by the Game Commission, is on a tract of land acquired by the Western Pennsylvania Conservancy. The Nature Conservancy, Pennsylvania/New Jersey Field Office, is presently working to acquire a significant tract of serpentine barren vegetation in southeastern Pennsylvania which contains several endangered plants.

Through the Natural Areas Program of the State Forest System new areas are designed to protect plants. Alan Seegar Natural Area, Centre County, contains an outstanding display of Small's twayblade (*Listera smallii*), a proposed State endangered species. A recent find of mountain alder (*Alnus crispa*) in Bedford County will be protected by an extension of the existing Sweet Root Natural Area to include the location of the plants.

The Pennsylvania Biological Survey

The Pennsylvania Biological Survey, an umbrella group interested in all Pennsylvania flora and fauna, was formed in early 1979, at least partially, as a result of developing interest and work with the State's endangered wildlife and plants. It has as a main objective to promote the responsible and comprehensive management of all Pennsylvania's wild resources.

The Survey sponsored the first "Conference on Species of Special Concern—Threatened and Endangered Species of Pennsylvania" on March 7, 1981, at the Carnegie Museum of Natural History in Pittsburgh. The Survey includes representatives from the various State wildlife and natural resource agencies, private conservation groups, and the chairpersons of each of the en-



Photo by Paul G. Wiegman/Western Pennsylvania Conservancy

The spreading globeflower (*Trollius laxus* ssp. *laxus*) is historically known from 14 sites in Pennsylvania; it is now extant at only two—Northampton County in the east and Lawrence County in the west. The Northampton site is one of the largest remaining colonies in northeastern U.S.. Both colonies of the species are being considered for protection by private conservation groups. *Trollius* is included in the Service's Notice of Review (F.R. 12/15/80) as a Category I species. One other State plant, the white-fringed prairie orchid (*Platanthera leucophaea*) is also listed under Category I. Seven plants are listed under the review's Category II. One State species, the small whorled pogonia (*Isotria medeoloides*), has been proposed as Endangered under the Endangered Species Act of 1973.

dangered species committees mentioned in this story.

The information for this State feature was submitted to the BULLETIN staff by Mr. Michael Puglisi, the former Endangered Species Coordinator for PGC (Mr. Puglisi recently left PGC to engage in further academic study); Mr. Clark Shiffer, Herpetology and Endangered Species Coordinator for PFC; and Mr. Paul Wiegman, Director of the Natural Area Programs for the Western Pennsylvania Conservancy.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example: (F.R. 9/4/81)—identify the month, day, and year in which the relevant notice or rulemaking was published in the *Federal Register*

Co-op Units Conducting Endangered Species Projects

by Michael Bender



Donna and Joseph McGlincy, researchers with the Alabama Wildlife Co-op Unit, suturing a transmitter incision in a juvenile Eastern indigo snake.

Of the various Service programs assisting in Endangered species conservation, the Cooperative Research Units program is not one of the most visible. Yet individual units are doing important work on a number of listed animals, as well as other fish and wildlife species. During fiscal years 1979-81, units in 17 States conducted 35 projects on 25 Endangered and Threatened animals.

The co-op units program began in 1935 with an idea by J. N. (Ding) Darling, who recognized the inadequacy of existing wildlife research and training efforts. He helped set up the first Cooperative Wildlife Research Unit that year at Iowa State College, and soon other units were established at schools throughout the country. Their basic purpose was to enhance cooperation among the Federal Government, State agencies, universities, and private organizations on joint research projects and education. Currently, the program includes 26 fishery, 21 wildlife, and 3 combined units. The Office of Cooperative Units was established in 1979 to administer the program.

Service biologists conduct the business of each unit, with the direction of a coordinating committee made up of a representative from each cooperator. In addition to conducting research projects, units provide technical assistance for management, issue special reports,

disseminate material already published, and organize training sessions.

Eastern Indigo Snake Project

One example of the co-op projects on listed species is an ongoing study on the status of the Eastern indigo snake (*Drymarchon corais couperi*) in Georgia, which is being conducted by the Alabama Cooperative Wildlife Research Unit at Auburn University. Cooperators include the Auburn University Agricultural Experiment Station, the Game and Fish Division of the Alabama Department of Conservation and Natural Resources, the Wildlife Management Institute, and the Service.

Funding for various facets of the project has come from the Service, the Georgia Department of Natural Resources, Auburn University, and the National Wildlife Federation. The research has already yielded new data on the snake's ecology, its distribution within Georgia, its habitat requirements, and measures to promote its conservation.

One of the largest colubrid snakes in North America, the Eastern indigo may achieve lengths of over 8 feet. Its name is taken from the snake's smooth, iridescent body scales of a deep blue-black color. Although it was reported historically throughout the southeastern United States coastal plain, from South

Carolina to Florida and west to southern Louisiana, only southeastern Georgia and peninsular Florida currently are believed to support sizeable populations. (Both States now give the snake full protection, and it is classified federally as a Threatened subspecies.) Among the purposes of the project, therefore, are to explore the various factors leading to the snake's decline and to delineate ways of promoting its recovery.

Georgia Distribution Survey

Beginning in May 1978, Joan E. Diemer and Alabama co-op unit leader Dan W. Speake distributed two questionnaires to solicit current information on the distribution of the Eastern indigo snake in Georgia. One form was sent to herpetologists who would possibly have Georgia specimens or records, and to State wildlife biologists who might have knowledge of its occurrence. The second form added a description of the snake and an inquiry on the person's ability to correctly identify the subspecies; this version was sent to Soil Conservation Service personnel, conservation officers, and amateur naturalists within the snake's Georgia range. Both forms inquired about sightings and capture locations. Of 373 questionnaires distributed during the early months of the study, 182 were returned, and 62 persons furnished information on Eastern indigo sightings. The sightings were ranked by the investigators according to the likelihood of validity. An additional 111 references provided further records. Although there were differences in opinion according to locality, the consensus of the respondents was that the snake had indeed declined over the past 10 years.

Extensive field work, including follow-up interviews, was conducted from September 1978 through June 1980, yielding the additional references, additional sightings, and habitat information. Actual field time during some 40 trips to southern Georgia was divided among interviews, habitat surveys, and searching for the snake.

Overall, approximately 590 Eastern indigo snake sightings were reported during the course of the study, and 511 were judged to be reliable. Of the 94 coastal plain counties, 42 had valid sightings, with Coffee County leading at 56 individual references. Some of the data were historical; chronologically, the records span about 82 years.

Several of the study findings have a direct bearing on the snake's status.

Photo by Dan Speake/Alabama Wildlife Co-op Unit

Habitat surveys revealed that 88 percent of the 60 Eastern indigo sighting localities were xeric areas associated with deep, well drained sandy soils. According to Speake and Diemer, planted slash pine-scrub oak habitat provided most of the sightings, followed by the long-leaf pine-scrub oak type. Further, the study confirmed earlier data on the importance of gopher tortoise (*Gopherus polyphemus*) burrows on sand ridges as Eastern indigo snake refuges and essential overwintering sites. The fate of the two reptiles is increasingly being seen as having a direct and vital link.

Radio Telemetry

Because of the secretive and sometimes subterranean habits of snakes, field study of these reptiles is often difficult. However, the use of radio telemetry in ecological research on a growing variety of animals offered promise for the Eastern indigo project. Between September 1976 and April 1979, Speake and Joseph McGlinchey of the Wildlife Unit, and Thagard R. Colvin (of the Georgia Department of Natural Resources) released 39 marked indigos on a protected study area near Tifton, Georgia. Of these, 32 had been fitted with tiny radio transmitters so that their movements could be tracked to determine preferred habitat types.

After deciding that only internal transmitters would be practical, a number of different designs were made and field tested; seven snakes carried more than one instrument. Two different types were found acceptable for further use, both of which required surgical implantation. The first, with an average operating life of 52 days, featured a small external broadcasting antenna which had a range of approximately 805 meters with ground-based tracking equipment. The second type had a similar range, but carried a high accuracy thermistor to give a temperature correlation with the pulse rate.

Among the initial findings of the radio telemetry study was that the Eastern indigo exhibited wide variation in movements, some being sedentary and others traveling more than 3.2 kilometers from the release sites. Many of the longer movements were from one habitat type to another, suggesting a requirement for several types within the annual range. According to the investigators, areas managed for Eastern indigos should ideally consist of several thousand hectares to provide adequate year-round habitat. The snakes moved from smaller areas of sandhill habitat to the vicinity of agricultural fields and stream bottom thickets in summer. During late summer and fall, they generally moved extensively, seeking mates or winter dens. Inactive gopher tortoise

burrows accounted for 67 percent of Eastern indigo dens during the study.

None of the snakes showed any serious ill effects from implantation of the transmitters. Research is continuing into development of yet more efficient instruments.

Captive Propagation

The Alabama co-op unit is in the fourth year of a captive propagation and restocking effort on the Eastern indigo snake. About 40 adult snakes are being kept on hand as breeders, and for research on reproduction. Some problems have been encountered with egg fertility and fungus on incubating eggs, but research into techniques for improving success is being conducted by graduate student Donna McGlinchey, technician Thomas Jones, and Speake.

Since 1977, more than 200 marked Eastern indigos have been released into nine protected study areas in Georgia, Florida, Alabama, and Mississippi. A number of the snakes have been recaptured for measuring growth rates. (Some were carrying radio transmitters.) Further captive propagation and monitoring of release area populations may continue under plans advanced for additional research on the snake.

Preliminary Conclusions

After analysis of the data gathered so far, the investigators feel that the snake is maintaining viable populations in protected areas of suitable habitat. They

believe, however, that some populations will decline in the future as real estate development, certain forestry practices, and agricultural conversion alter the vital sandhill habitat. Among their chief recommendations is that the habitat loss be mitigated through establishing sanctuaries to preserve portions of the sandhill and other ecosystem types. The feasibility of various other measures is being investigated, including burrow gassing restrictions, further captive propagation and restocking, and prescribed burning to increase plant diversity and maintain greater gopher tortoise densities. Continued legal protection is seen as essential, since the snake's large size, docile nature, and handsome coloration have made it vulnerable in the past to overcollection for the pet trade. The need for public education to foster greater awareness of the Eastern indigo's status, and to counter the widespread unpopularity of snakes in general, also is recognized as important.

Recovery Plan

The Alabama Cooperative Wildlife Research Unit is currently preparing an Eastern Indigo Snake Recovery Plan for the Service. Unit leader Speake is the principal investigator, and is being assisted by Diemer and Joseph McGlinchey.

* * * *

Other selected co-op projects will be featured periodically in future issues of the BULLETIN.



Photo by Alabama Wildlife Co-op Unit

Two large male indigo snakes being handled by researchers.

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—

Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director-Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species.

The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Bobcat Findings Await District Court Approval

Final export findings for bobcat, lynx, river otter, Alaskan gray wolf, Alaskan brown bear, American alligator, and American ginseng taken in the 1981-82 season were published by the U.S. Scientific and Management Authorities for the CITES (F.R. 10/14/81). The State-by-State findings for bobcat export will be delayed for at least 60 days; the other findings are effective immediately.

Two years ago, Defenders of Wildlife, Inc. challenged the adequacy of criteria used by the Scientific Authority in advising whether export would not be detrimental to the survival of the species with regard to bobcat exports resulting from the 1979-80 harvest season. On February 3, 1981, the U.S. Court of Appeals for the District of Columbia Circuit held that the criteria (challenged by Defenders) are invalid. The court set aside the criteria to the extent that they are not based on reliable estimates of the bobcat population and data showing the total number of bobcats to be killed in each of the States involved.

The Court of Appeals remanded the case to the District Court for findings of fact and conclusions of law consistent with its opinion. On remand, with the agreement of both the Service and De-

fenders, the District Court dismissed the case as it pertained to export of bobcat taken during the previous seasons. The Court enjoined the Service from authorizing export of bobcat taken after July 1, 1981, until it developed guidelines consistent with the Court of Appeals decision and made findings based on the guidelines.

In compliance with the District Court injunction dated April 22, 1981, the Service's May 26, 1981, notice (the first notice pertaining to this year's export findings) announced a request for the States to submit data necessary to obtain reliable population estimates and data concerning the number of bobcats to be killed. Not regarding such data to be entirely sufficient for its findings, however, the Scientific Authority also requested other information necessary to satisfy its own original criteria.

Defenders did not view the Service's compliance as satisfactory and stated in formal response that the "Service failed to establish guidelines for the proposed Scientific Authority advice or to explain the methods used in formulating this advice." The Service, however, believes that the criteria discussed in the May 26, 1981, notice and specifications of

types of information needed from States provide the guidelines required by the Appellate and District Courts.

During the 60-day delay of the effective date for bobcat export approval, the Service will seek vacation of the injunction issued by the District Court for the District of Columbia, since it believes that data submitted by the States, as well as that collected by the Service, fully support its export findings. (See the June 1981 BULLETIN for more information).

Export Approval

The Service approved the issuance of export permits for certain Appendix II species lawfully taken during the 1981-82 season in the following States and Indian territories, on the grounds that both Scientific Authority and Management Authority criteria have been met:

Bobcat—Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Utah, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, Klamath Tribe, Navajo Nation.

Lynx—Alaska, Idaho, Minnesota, Montana, Washington.

River Otter—Alabama, Alaska, Arizona, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, New Hampshire, New York, North Carolina, Oregon, South Carolina, Vermont, Virginia, Washington, Wisconsin.

Alaskan gray wolf—Alaska.

Alaskan brown bear—Alaska.

American alligator—Florida and Louisiana.

American ginseng—Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Minnesota, Missouri, North Carolina, Ohio, Tennessee, Vermont (artificially propagated ginseng only), Virginia, West Virginia, and Wisconsin.

ICAC Objects to Peregrine Permit

A letter from the International Convention Advisory Commission (ICAC) to the Secretary of the Department of the Interior dated May 27, 1981, objected to the Service's procedures in issuing a permit to the United Peregrine Society for the import of fledgling peregrine falcons (*Falco peregrinus anatum*) from Mexico. The Service's response to ICAC's objections was printed in the October 16, 1981, *Federal Register*.

ICAC's objections to the permit issuance are partially procedural, since the Commission would ordinarily be consulted in such cases. Other objections by ICAC involved biological concerns, all of which were thoroughly reviewed as important issues by the Service before issuing the permit.

An initial recommendation of OSA to

deny the permit request was overruled by the Acting Deputy Director of the Service after consultation with other facets of the Service and with other biologists. According to the Service, the biological concerns raised by ICAC involved issues on which the scientific community holds divided views.

ICAC's letter of objection and the Service's response involve a very complex and technical set of biological questions. For more information, please consult the *Federal Register*. This is the only instance when the Department has needed to formally publish notice of a disagreement with an ICAC recommendation. This was done in order to comply with provisions of the Endangered Species Act of 1973, as amended.

Culebra EIS Available

The Service announced the availability of a final environmental impact statement (FEIS) on the environmental and other effects of transferring certain lands declared excess by the U.S. Navy in the Culebra Island group of Puerto Rico (F.R. 10/13/81). This disposition will affect six species protected under the Endangered Species Act of 1973, as amended.

The FEIS evaluates impacts of six alternatives for disposing of and administering these lands, including several alternatives which would implement the recommendations of a Joint Report of October 1973, entitled "Culebra: A Plan for Conservation and Development." This Plan resulted from a 1971 resolution of the Senate Committee on Interior and Insular Affairs which directed the Secretary of the Interior, in consultation with the Commonwealth of Puerto Rico, to conduct a study and develop a plan for the best use of lands on Culebra and the adjacent keys.

The Joint Report Alternative would deed to the Commonwealth of Puerto Rico approximately 936 acres of excess Navy land on the island of Culebra and about 262 acres of National Wildlife Refuge lands on the island of Culebrita. It would also transfer to the Service approximately 776 acres of land on Culebra. For those lands proposed for

transfer to the Commonwealth, strict conveyance restrictions are included which are designed to protect the wildlife related and cultural resources while allowing for the enhancement of local economic and social conditions.

The proposed action of the FEIS is similar to the Joint Report Alternative, except that Culebrita would be retained within the National Wildlife Refuge System. The wildlife related resources on Culebra would be protected while allowing for enhancement of local economic and social conditions.

It is significant to note that the proposed action of this FEIS is different from the proposed action of the draft EIS (the Joint Report Alternative). This change in position by the Service was based on an assessment of the comments on the draft statement which overwhelmingly favored retention of Culebrita Island in the National Wildlife Refuge System.

The FEIS evaluation standards, based on the Joint Report and other discussions, specify which alternatives best meet the needs of all interested parties. In general, the standards include maintaining and building on the political accords of the past, providing opportunity for economic benefits for Puerto Rico, and preserving the wildlife resource values (especially Endangered

and Threatened species) of the Culebra Island group.

Listed species which will be affected by the disposition of the land in question are the Endangered brown pelican (*Pelecanus occidentalis*); Endangered Culebra Island giant anole (*Anolis roosevelti*) for which the Mount Resaca area has been designated as Critical Habitat; and four species of marine turtles which either nest on Culebra and Culebrita or are found in the adjacent waters. The latter include Threatened loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) turtles and Endangered leatherback (*Dermochelys coriacea*) and hawksbill (*Eretmochelys imbricata*) turtles. Critical Habitat has been proposed for Culebra, Culebrita, Cayo Norte, and Mona Island for the hawksbill (F.R. 10/22/80).

Written comments on the FEIS may be sent to Mr. Walter O. Steiglitz, Regional Director, U.S. Fish and Wildlife Service, 75 Spring Street, S.W., Atlanta, Georgia 30303. For further information contact Mr. Kenneth M. Butts, Chief Ascertainment Biologist, U.S. Fish and Wildlife Service, 75 Spring Street, S.W., Atlanta, Georgia 30303. Telephone (commercial) 404/221-3548; (FTS) 242-3548.

OKALOOSA DARTER

Continued from page 3

may be found in areas of moderately fast current with water temperatures between 45° to 75°F and depths to about 5 feet along the 186 linear miles of stream habitat.

The Okaloosa darter was classified as Endangered in 1973 due to its limited range and the deterioration and loss of habitat. Recently, the brown darter has been found in increasing numbers within the range of the Okaloosa darter and may be displacing it in some areas.

The objective of the Okaloosa Darter Recovery Plan is to improve the species' status to the point that it may be reclassified from Endangered to Threatened and ultimately be removed from the U.S. List of Endangered and Threatened Wildlife and Plants. To reach this objective the plan identifies three primary strategies: (1) determine biological characteristics and habitat requirements; (2) protect extant populations and habitats; and (3) increase population sizes and reestablish the species throughout its former range.

Among the highest priority tasks to

prevent the species' extinction are: (1) gaining an understanding of the extent of competition between the Okaloosa darter and brown darter and monitoring the sympatric populations; (2) monitoring of habitat changes and evaluating activities which might alter the darter habitat; and (3) determining biological characteristics of the darter populations and physical parameters of the habitat. Determination of darter distribution within its range has been completed.

The plan recommends that a management plan be developed for Eglin Air Force Base as soon as sufficient information is available. The plan also suggests habitat improvement, management to reduce competitors and predators, and additional population dynamics studies, including extended population monitoring and periodic sampling.

Implementation of the recovery tasks for both plans will be initiated by the Service's Atlanta Regional Director and carried out through the Atlanta Regional Endangered Species Office. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, 75 Spring Street, S.W., Atlanta, Georgia 30303 (404/221-3583).

NEW PUBLICATIONS

The first supplement to the *Inventory of Rare and Endangered Vascular Plants of California*, Special Publication No. 1 (2nd Edition), edited by James Payne Smith, Jr., was published by the California Native Plant Society (CNPS) in April 1981. It is available for \$3.00, tax and postage included, from CNPS, 2380 Ellsworth, Suite D, Berkeley, California 94704.

Wildlife Monograph No. 77 (Supplement to *The Journal of Wildlife Management*, Vol. 45, No. 3, July 1981), "Deer Social Organization and Wolf Predation in Northeastern Minnesota," by Michael E. Nelson and L. David Mech was published by the Wildlife Society. Copies are available for \$2.70 from the Wildlife Society, 5410 Grosvenor Lane, Bethesda, Maryland 20814.

An International Register of Specialists and Current Research in Plant Systematics, 1981, compiled and edited by Robert W. Kiger, T. D. Jacobsen, and

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—The Editor

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	23	756

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 11 animals
9 plants

Number of Critical Habitats listed: 50
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 44
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

October 31, 1981

NEW PUBLICATIONS

Continued from page 11

Roberta M. Lilly was published by the Hunt Institute for Botanical Documentation. Copies are available for \$10.00 (prepaid) from the Hunt Institute at the Carnegie-Mellon University in Pittsburgh, Pennsylvania 15213. This publication is based on data from over 1500 questionnaires returned between November 1978 and December 1980. The Institute plans to continue this Register as an ongoing project, with triennial resolicitation of data and publication of updated printed editions.

U.S. Exports and Imports of Cacti, 1977-1979, August 1981, prepared from U.S. Fish and Wildlife Service data by Linda McMahon, Ph.D. for the International Convention Advisory Commission (ICAC) is now available. A second publication, a reference list of the Appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, *The Appendices Arranged in Taxonomic Sequence and Alphabetically by Common and Scientific Names*, compiled by the staff of ICAC is also available. Copies of both publications may be requested from Mr. Thomas McIntyre, International Con-

vention Advisory Commission, Chairman, Room 713, FB-1, 6505 Belcrest Road, Hyattsville, Maryland 20782.

The 1981 Supplement to *A Bibliography of Endangered and Threatened Amphibians and Reptiles in the United States and its Territories (Conservation, Distribution, Natural History, Status)* by C. Kenneth Dodd, Jr. is now available from the Smithsonian Herpetological Information Service as publication No. 49. The original bibliography, publication No. 46 (1979) and the recent supplement may be requested from the Division of Reptiles and Amphibians, Smithsonian Institution—USNM, Washington, D.C. 20560.

Three INFORMATION PACKETS—on whales, seals, and sea turtles—are

now available from the Center for Environmental Education. The packets include general introductions to the species (14 whales, 7 sea turtles, and 14 seals); black and white drawings of each animal; data on range, habits, size and weight, and population status; surprising facts about each animal; background material on evolution, anatomy, and general characteristics; and suggestions on what you can do to help protect these animals. All three packets (48 sheets) may be purchased for \$6.25 plus \$1.50 postage and handling; individual packets (please specify) cost \$2.50 each, plus \$.85 postage and handling. Send order to Center for Environmental Education, 624 9th Street, N.W., Washington, D.C. 20001 (202/737-3600).

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Lacey Act Amendments Aid Plant Conservation

On November 16, 1981, President Reagan signed into law amendments to the Lacey Act which prohibit interstate sale of rare plants collected in violation of State laws and plants protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The amendments also incorporate the Black Bass Act and increase the penalties for all violations of the Lacey Act.

Existing State plant conservation programs and legislation have been considerably hampered by the lack of State jurisdiction over plant sales beyond their borders. The amendments, which

allow the Federal government to investigate such apparent violations anywhere within the United States, should serve as a deterrent to illegal traffic of State protected species.

The market for certain plants, including cacti, orchids, and several carnivorous (insectivorous) plants, is quite lucrative. Therefore, in the recent past suppliers have not hesitated to violate State laws as well as regulations that protect plants in national parks and other Federal lands.

Cacti from the Southwest deserts are particularly sought after. In 1979, Arizona's "cactus cops" arrested 91 vi-

olators of that State's permit program. Despite this enforcement effort, "rustlers" stole an estimated \$500,000 worth of cacti from the State, including 400 saguaros. These giants are often sold for several hundred dollars apiece.

Plant theft, however, is not confined to the desert. Many of Florida's protected plants, including orchids, bromeliads, and pitcher plants, are also often taken and sold in interstate trade.

Law Protects Candidate Plants

Although a number of State listed plants which will be protected by the
Continued on page 5

In Memory

On December 10, 1981 Dr. Howard "Duke" Campbell died at age 46 in Gainesville, Florida. Duke was a dedicated conservationist whose work in the Endangered Species Program was marked by intense enthusiasm and spirit. His good judgement, fine sense of humor, and dedication were greatly valued by his friends and colleagues, and his efforts on behalf of the conservation movement will be sincerely missed.

Duke entered the Service as a staff herpetologist with the Office of Endangered Species in Washington, D.C., and then transferred to the Denver Wildlife Research Center's Gainesville Field Station. As Supervisory Zoologist at the field station, Duke's research centered on studies of manatees and nongame species on National Wildlife Refuges in the Southeast. He was an internationally recognized herpetologist and leading expert on crocodilians—he chaired the IUCN's Crocodile Specialist Group.

Duke is survived by his wife Kathy and their two children, Mariel and Colin. The family has requested that those wishing to honor Duke make contributions in his name to the Florida Defenders of the Environment, the National Audubon Society, or the Sierra Club.

Black-footed Ferret Findings Give Biologists New Hope

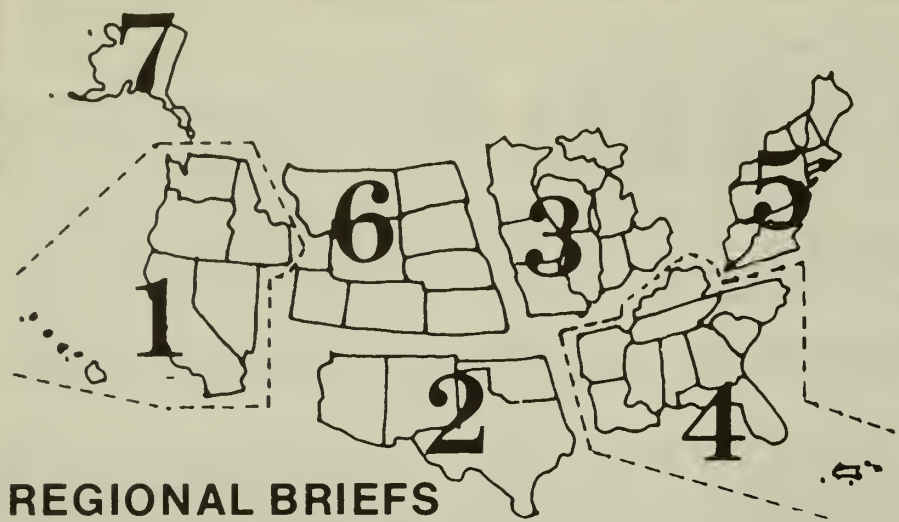


Photo by U.S. Fish and Wildlife Service

News of several black-footed ferret (*Mustela nigripes*) findings have given renewed hope for what is perhaps North America's most endangered mammal. This photo was taken in Park County, Wyoming, in November 1981. For more information, see this issue's Regional Briefs—Region 6.

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REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of November:

Region 1—Between August 17 and 22, 21 birds were trapped at Hawaii National Park for use in a forest bird dis-

ease study by the University of Hawaii. Four were native to the Island of Hawaii (all were Amakihi), the balance being house finches (7), white eyes (5), rice birds (3), and linnets (2). Preliminary examination of all blood stains from the 21 birds did not reveal any malaria or

other protozoan agents. Disease is thought to be a major threat to Hawaii's Endangered forest birds.

A status survey report was completed on the Amargosa toad (*Bufo nelsoni*). The toad is presently known to occur at one previously-known and three closely-spaced new sites. A comparison of literature records indicates either that the range of the toad is reduced from the past or that misidentifications have confused the issue.

Region 2—Endangered Species Specialist, Jack Woody, traveled to the Mexican southwest coast to review, evaluate, and learn about sea turtle projects co-sponsored by the Service and the World Wildlife Fund. Attention will be focused on the green turtle nesting beaches, with field projects under the leadership of Kim Clifton.

In order to perpetuate the most endangered Colorado River endemic, 41,500 young bonytail chubs (*Gila elegans*) were stocked into Lake Mohave. The fish, which were 1981 young of the year from Dexter National Fish Hatchery, averaged 4 inches in size.

From June to September 1981, a total of 15,100 razorback suckers (*Xyranchea texanus*) have been stocked in the Gila River drainage. Five of the stocked razorbacks were recently accidentally captured from the Gila drainage, indicating that the species is surviving. (See the September 1981 Bulletin for more information on the stocking program.)

Under the terms of a Service Loan Agreement, the Rio Grande Zoological Park in Albuquerque received a female Mexican wolf and will receive a male at a later date. The agreement was made in the interest of dispersing Mexican wolves among a number of institutions and in an effort to avoid the possibility of a catastrophe affecting all of the animals in the U.S.-Mexican cooperative captive breeding program. It is estimated there are fewer than 30 of the wolves left in the wild, and the species is rapidly nearing extinction. There are ten wolves in the captive breeding program. In addition to the Rio Grande Zoological Park, animals are being maintained at the Arizona-Sonora Desert Museum in Tucson, and the Wild Canid Survival and Research Center Wolf Sanctuary in St. Louis.

An article on Dexter National Fish Hatchery appeared in the November-December 1981 issue of "New Mexico Wildlife." Entitled "A Refuge for Southwestern Fish," the article gives historical and current information about the hatchery and the fish maintained and bred there.

Region 4—The Florida Department of Natural Resources' slow speed boating
Continued on page 6

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Service Assists Foreign Conservation Projects



*Through cooperative programs in the U.S.S.R. and foreign currency funded projects in India, the Service accommodates research in the wintering and breeding grounds of the Endangered Siberian white crane (*Grus leucogeranus*). Work, largely conducted by the International Crane Foundation, includes captive reproduction, reintroduction, and public awareness activities.*

Since the problems facing Endangered species are global in scope, and because species loss in general is accelerating throughout the world, cooperation among nations is essential if we are to maintain a healthy and diverse biosphere. We therefore have asked the International Affairs Staff to highlight some of the Service's major responsibilities and activities in other parts of the world. First in a series of articles is an overview by acting chief Larry Mason.

The mission of the Fish and Wildlife Service is predominantly domestic, involving the management of wildlife and its habitats across a broad expanse of territory and in nearly every conceivable ecosystem. Over half the world's wildlife biologists work in this country, and they are at the top in their field. Unfortunately, however, this has not always been the case. Wildlife management probably began in North America around 1646, when the Virginia settlers ordered a closed season on deer because they had been thoroughly overhunted in the English colonies—less than four decades after the landing in Jamestown.

And yet, for all the folly of the early colonists, it is through lessons learned from such mistakes that we have turned the tide for a number of other species, adopted measures for precise habitat management, developed ecological profiles for land use planners, and placed important tools in the hands of developers which allow wildlife considerations to be taken into account as never before.

It is little wonder that much of the world looks to the United States for leadership and guidance in managing wildlife and habitats. Regardless of how we individually feel about the job the Service performs, we are perceived abroad as the standard.

Succeeding Congresses and Administrations in the last 50 years have also assigned the Service, under 11 statutory authorities, a variety of international duties. The U.S. also is party to over 24 treaties or conventions with foreign nations which give further international responsibilities to the Service. These treaties and conventions do not simply have the same effect as statutes; they are the law, and the Service is bound to them. We can just as easily be taken to court over our failure to fulfill a convention responsibility as for failing to carry out a legislative requirement.

The earliest treaty involving the Service was probably the 1909 Treaty between the U.S. and Great Britain (on behalf of Canada) concerning boundary water issues. The earliest migratory bird treaty (1916) was also with Great Britain, again acting for Canada, and today there are such treaties with Mexico, Japan, and the USSR as well. Additional treaties, to which the Service is an active representative, govern the take of salmon in the North Atlantic. Lacey and Black Bass Act amendments have served to prevent the U.S. from encouraging over exploitation of foreign species. More recently, in 1973, the Convention on International Trade in Endangered Species of Wild Fauna and Flora has bound the Service together in

a set of shared responsibilities with fully one-third of the nations on our globe.

By and large, each of these treaty and statutory responsibilities align themselves with a major program area of the Service, whether it is Endangered Species, Wildlife Permits, Fisheries Resources Management, Migratory Bird Management, or Law Enforcement. Some, however, do not; instead, they require marshalling a wide range of Service talents to meet the requirements of implementation. For this reason, the International Affairs Staff was reestablished in the Office of the Deputy Director after being linked for several years with the Endangered Species Program.

One activity handled by the International Affairs Staff is that of implementing the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere. This 1940 convention contains an environmental ethic parallel to the thinking of the time and clearly reflects the influence of Aldo Leopold.

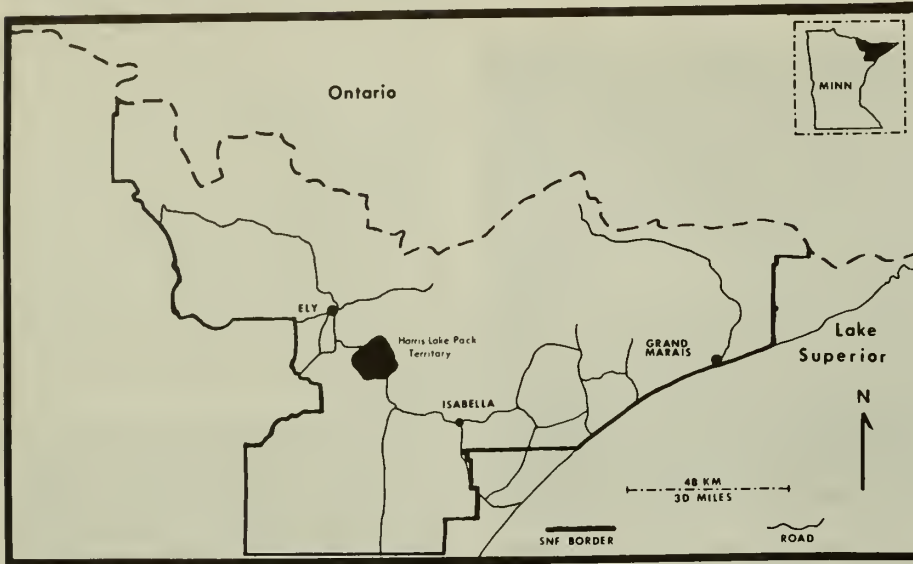
Work under the Convention involves research on a variety of wildlife, including a number of listed species. Among subjects of special concern are conservation of sea turtles, migratory species, and their habitats; management of breeding and wintering areas for North American migrants; training in both species and ecosystem management; and the goal of drawing the lengthy hemispheric flyways together in cooperative planning and management.

Another International Affairs Staff activity relates to Section 8 of the Endangered Species Act—a section of the Act which, in fact, extends far beyond the conservation of Endangered species alone. Responding to global requests, this authority taps various funding sources, including excess U.S. holdings of foreign currencies, for transferring to other countries our expertise in wildlife management, water management, censusing methods, radio tracking techniques, estimating yield, and other topics. Results from these activities are encouraging. New parks have been established in India, there is now a wildlife service in Egypt, the most important wetlands in Iberia are under protection, and new refuges in South and Central America have been established.

Transcending East-West politics, the International Affairs Staff coordinates many of the responsibilities of the Assistant Secretary for Fish and Wildlife and Parks in dealings with both the Soviet Union and the People's Republic of China. These activities have added to our knowledge of aquaculture, the wildlife of the unique Aleutian land bridge, and the disastrous effects of the introduction of exotics into these countries.

Continued on page 8

A DECADE OF DATA FROM A SINGLE WOLF



The Superior National Forest and location of the Harris Lake Pack Territory. (Illustration reprinted from the *Proceedings of the 1975 Predator Symposium*, © 1977 by Montana Forest and Conservation Experiment Station, University of Montana-Missoula.)

by L. David Mech

Ever get the feeling that someone is following you? Then just think of how Wolf 2407 must feel. Fish and Wildlife Service scientists in Patuxent's Endangered Species Research Program have had this Minnesota wolf under surveillance for 10 years as of October 10, 1981. Wolf 2407—named for the number on her eartag—was originally captured and radio-collared on October 10, 1971. She was at least 1½ years old then, and the only other member of her pack at that time was her mate. The pair occupied an area of at least 30 square

miles centering around Harris Lake in the Superior National Forest, and was known as the Harris Lake Pack. The Harris Lake Pack itself has been followed since winter 1968–69 and has varied in size from 9 to 2.'

Wolf 2407 has been recaptured seven times, and so is now wearing her eighth collar. Each time she has weighed between 56 and 60 pounds. She has had at least 3 mates and has produced at least 5 litters totaling at least 13 pups.

Wolf 2407 has watched the local deer herd decline to a fraction of its former numbers, which no doubt accounts for

her relatively low average litter size. Nevertheless, she and her mate have held their territory (see accompanying map) for the entire period during which 2407 has been radioed, an area varying each year from 30 to 70 square miles.

One of 2407's offspring, male Wolf 5465, who was also radioed, dispersed from the Harris Lake Pack and formed his own adjacent to it, a pack known as the Little Gabbro Lake Pack. Although that animal was only followed for 3 years, one of his offspring, female Wolf 5935, was also radio-tagged; she dispersed from her pack, paired, and set up her own territory. This genetic line of wolves is one of only two lines that have been followed for three generations. Therefore, they are providing extremely valuable information on the degree of inbreeding in the local wolf population. Wolf 2407 has been located over 1,300 times during her life and observed almost 500 times. Her last radio is still working and potentially the animal could live a few more years. Data from her and numerous associates are providing significant information that will help not only in preserving Minnesota's wolf population but also those in many other areas.

Information available about the Harris Lake Pack from winter 1968–69 through 1974–75 is summarized in an article, "Population Trend and Winter Deer Consumption in a Minnesota Wolf Pack" by L. David Mech which was published in 1977 by the Montana Forest and Conservation Experiment Station, University of Montana in the *Proceedings of the 1975 Predator Symposium*.

Final Rulemaking Redefines Harm

The term "harm" under Section 9 of the Endangered Species Act of 1973 has been redefined to include only actions which actually kill or injure wildlife, including habitat modification (F.R. 11/4/81). The redefinition was proposed on the grounds that the original legislative language could be construed as prohibiting the modification of habitat, even though there was no actual injury to listed Endangered or Threatened wildlife or plants (F.R. 6/2/81).

Such an interpretation, according to Interior Department Solicitors, would go beyond the intent of Congress in the Act. Accordingly, the new definition includes habitat modification as harm only if it actually kills or injures wildlife by significantly impairing essential behavioral patterns.

The Service received numerous public comments from a variety of parties. Of the 328 comments received, 66 favored the redefinition as proposed, and 262 opposed the proposed redefinition. The bulk of criticism of the proposed redefinition was aimed at the legal memorandum attached to the proposal which discussed *Palila v. Hawaii Department of Land and Natural Resources*, 471 F. Supp. 985 (D. Haw. 1979), aff'd, 639 F. 2d 495 (9th Cir. 1981). The principal objection was that *Palila* was correctly decided and that the Service redefinition was intended to avoid the result of that case.

The Solicitor's Office, however, disagrees with the above objection, stating that the desired effect was to avoid the possible implication of the cases' con-

clusion, that Section 9 might apply to habitat modification which did not cause death or injury. For more information on this rule consult the *Federal Register* document.

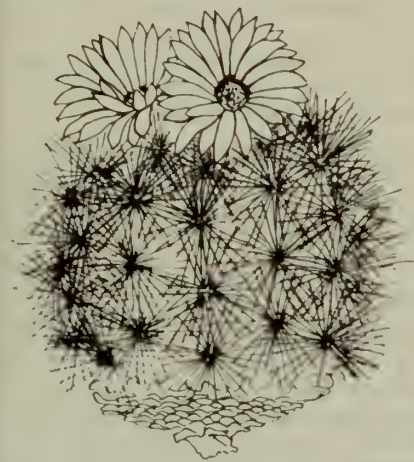
CITES List Corrections

The Service published a notice (F.R. 11/30/81) announcing corrections to the list of species included in Appendices I, II, and III of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which was published on September 4, 1981. The notice appears at 46 F.R. 58087–58088.

LACEY ACT

Continued from page 1

Lacey Act amendments are included in the Service's notice of review (F.R. 12/15/80), this notice does not insure any protection for the plants. Very few of the nearly 3,000 plants categorized in this Service document have been listed or are proposed for listing under the Endangered Species Act of 1973; it is not



The Clokey pincushion cactus (Coryphanta vivipara var. rosea) will benefit from the Lacey Act amendments. This attractive cactus is prized by both commercial and private collectors. Although it is widely distributed in Arizona, California, and Nevada, it is not abundant at any one location. It is protected by law in Arizona and Nevada, is on Appendix II of CITES, and is listed as a Category II plant on the Service's Notice of Review (F.R. 12/15/80). (Reprinted from "Threatened and Endangered Plants of Nevada—An Illustrated Manual," by Hugh N. Monzingo and Margaret Williams, May, 1980, p. 66.)

likely that many more will be proposed for listing in the near future. Therefore, it appears that the new Lacey Act amendments should be very helpful for the conservation of many plant species identified as rare in the respective States or by CITES and in need of Federal protection.

While the amendments apply to any interstate management or export of protected species, law enforcement efforts will focus on commercial dealers and suppliers. States that currently have plant laws and will, therefore, benefit from the new legislation include Arizona, California, Michigan, New Mexico, Nevada, Texas, Florida, and North Carolina.

Black Bass Act Incorporated

As well as adding plants to the Lacey Act for the first time, the new amendments combine the Lacey and Black Bass Acts into a single comprehensive statute. The combined legislation now provides more effective enforcement of State, Federal, Indian tribal, and foreign conservation laws protecting fish, wildlife, and rare plants.

The Lacey Act was one of the first Federal wildlife laws, passed in 1900 to outlaw interstate traffic in birds and other animals illegally killed in their State of origin. It was viewed then, as now, as a Federal tool to aid the States in enforcing their own conservation laws. The Lacey Act has been amended several times and its coverage expanded to include wildlife taken in violation of foreign law as well as State law.

The Black Bass Act of 1926 was based on the same philosophy as the Lacey Act. It provided Federal sanctions for the illegal interstate transportation of black bass taken, purchased, sold, or

possessed in violation of State law. Subsequently, the 1926 Act was expanded to cover all species of fish, and in 1969 was amended to encompass foreign commerce and fish taken, bought, sold, or possessed in violation of foreign law.

Penalties for Violators

Plant retailers and their suppliers who continue to deal in plants now protected by the amended Lacey Act face stiff penalties. The new legislation provides fines up to \$20,000 and prison terms up to 5 years for selling illegally acquired plants valued at over \$350. The increased penalties apply to all wildlife and plants now included under the Act's provisions. Penalties under the former Lacey Act consisted of up to \$10,000 and/or 1 year imprisonment.



The white-topped pitcher plant (Sarracenia leucophylla), which is protected by State law in Florida and Georgia, now receives Federal protection under the Lacey Act, as recently amended. This plant is known from southwestern Georgia and the Apalachicola River region of the Florida Panhandle, westward to southeastern Mississippi. The main threat to this species is habitat destruction, however, trade in this plant is also known to occur. Interest in these carnivorous plants as horticultural novelties has led to their removal from some areas where they once were common. (Reprinted from "Rare and Endangered Biota of Florida, Vol. Five—Plants," edited by Daniel B. Ward, page 108.)

RULEMAKING ACTIONS

November 1981

Service Studies Comments

The Service is conducting a study of the Endangered Species Act of 1973 as part of the government-wide regulatory review process required by Executive Order 12291. The study serves, also, as a preparation for Congressional reauthorization hearings on the Act to be held in 1982.

In response to a request for public involvement (F.R. 9/18/81), the Service received over 80 responses from State and Federal agencies, private conservation groups, business and industry representatives, universities, and indi-

vidual members of the public. The comments both question certain provisions of the Act, such as its present coverage of separate populations and subspecies of wildlife and plants as opposed to entire species, and make suggestions for new provisions which would expand the Act's coverage, such as the inclusion of plants under the Section 9 "taking provision."

Public comments are available for inspection at the Office of Endangered Species, U.S. Fish and Wildlife Service, 1000 N. Glebe Road, Arlington, Virginia.

Conference on Biological Diversity

by Michael Bender

The conferees organized into five working groups (Terrestrial Plant Species, Terrestrial Animal Species, Aquatic Species, Microbial Resources, and Ecosystem Maintenance), examining the ecological, social, and economic causes and consequences of diminishing biological diversity. After reviewing the trends of species loss worldwide, along with the quality of the existing knowledge base, technologies, and involved institutions, the groups recommended initiatives that the United States can undertake either unilaterally or in cooperation with other countries.

Each panel proposed 20 or more recommendations for action which will appear later when the conference proceedings are published. Most panels proposed the establishment of an inter-agency working group to detail how the conference recommendations might be implemented at the Federal level. Several panels recommended maintenance of a strong Endangered Species Program with full and equal protection for all listed species, regardless of their taxonomic grouping or whether they are domestic or foreign. Several Department of State speakers, notably Under Secretary James L. Buckley, vigorously supported the concept of a strong Endangered Species Act.

The proceedings of the conference, which will include the working-groups' recommendations, are expected to be available after February 1, 1982.

A Strategy Conference on Biological Diversity was held in Washington, D.C., November 16-18, as part of a continuing effort to increase the awareness of needs and opportunities in maintenance of worldwide biological diversity.

One of the main purposes of the conference was to provide policy and program guidance to the sponsoring agencies, which included: the Department of State, Department of the Interior, Department of Agriculture, Council on Environmental Quality, Smithsonian Institution, National Science Foundation, Agency for International Development, and the U.S. Man and the Biosphere Program. Other participants and observers at the conference included representatives of the Congress, universities, other countries, and scientific, conservation, and business organizations.

REGIONAL BRIEFS

Continued from page 2

regulations for manatee protection became effective on November 15, 1981.

On November 15, 1981, Chassahowitzka National Wildlife Refuge personnel completed posting the boundaries of the manatee sanctuaries at Kings Bay, Crystal River, Florida. All waterborne activities are prohibited in these areas between November 15-March 31 of each year.

Region 5—The final draft of the Maryland Darter Recovery Plan was submitted to Washington for review on November 3, 1981. This species is currently known from only one riffle area in Deer Creek, Harford County, Maryland.

On November 19, Paul Nickerson visited Martha's Vineyard, Massachusetts, to evaluate a proposed project to cross-foster eagle chicks with osprey.

A meeting of the Eastern Peregrine Falcon Recovery Team was held November 4-6 in Asheville, North Carolina. Team Leader, Eugene McCaffrey, New York State Department of Environmental Conservation, presided. Topics discussed by the team centered around future hacking activities.

In a cooperative effort to conserve the Furbish lousewort (*Pedicularis furbishiae*), the Service and the State of Maine Critical Areas Program have recently completed the first phase of an education/landowner awareness program in the St. John River valley. The program was designed to determine

those individuals with louseworts on their land, explain the significance of the plan to them, and seek their cooperation in protecting the plant. The cooperation and support shown by the landowners have been very encouraging.

A 1981 Public Education/Stay on the Alpine Trail Program to protect the Endangered Robbins' cinquefoil (*Potentilla robbinsiana*) was successfully completed. The program was a coordinated effort between the Appalachian Mountain Club, U.S. Forest Service, U.S. Fish and Wildlife Service, and private individuals. Results of the study will soon be available.

Region 6—In early November a male black-footed ferret (*Mustela nigripes*) was trapped and radio-collared near Meeteetse, Wyoming. The ferret was continuously tracked until the transmitter quit on November 15. On November 19 the animal was retrapped through spotlighting—the collar was removed and the animal was released. Further radio-telemetry work is planned in accordance with the Black-footed Ferret Recovery Plan to obtain data on the movement, behavior, and activity patterns of the animal. Attempts to recapture the ferret will be postponed, however, until adequate telemetry equipment is prepared. The released animal and two or three additional ferrets were found after a ferret was killed by dogs on September 25, 1981 (see October 1981 issue of the BULLETIN). The ferrets are living on private land. This is the first time a behavioral study has been



One of the recently discovered ferrets—trapped and soon to be radio-collared.

Photo by U.S. Fish and Wildlife Service

conducted on a ferret in a white-tailed prairie dog (*Cynomys leucurus*) colony; very limited earlier work was done in black-tailed prairie dog (*Cynomys ludovicianus*) colonies. The black-tail's range is east of the white-tail's range, although there is some overlap.

The Colorado Native Plant Society hosted the Rocky Mountain Regional Rare Plant Conference at the Denver Botanical Gardens in Denver, Colorado, on November 5 and 6, 1981. Additional sponsors included the Denver Botanical Gardens, Utah Native Plant Society, Wyoming Native Plant Society, National Park Service, Native Plant Society of New Mexico, Association of Western Native Plant Societies, and the U.S. Fish and Wildlife Service. More than 200 participants from Federal and State agencies, universities, and industry attended.

Key topics discussed included: Why Save Rare Plants?; Rocky Mountain Overview; The Endangered Species Act; Recovery; Section 7; Federal Policies, Programs, and Regulations; State Policies, Programs and Regulations; Information Sources; Industry Policies and Programs; and Field Inventory Methods. Work groups were held on Regulations, Data Gathering, Consultation, Mitigation, Recovery, and Funding. Information about obtaining the conference proceedings will be provided when they become available.

Region 7—Endangered species biologist, Skip Ambrose, participated in the peregrine falcon trapping-banding effort sponsored by Region 2 on Padre Island, Texas this fall. The trapping effort resulted in the capture of 202 peregrines, one of which was an immature falcon banded as a nestling this summer in a Tanana River eyrie in interior Alaska. This is the eighth band encounter since the Service actively began its recent recovery program for peregrines in Alaska in 1977. A total of 462 Arctic and American peregrine falcons have been banded in Alaska since the recent recovery program began.

The future of the Aleutian Canada Goose continues to brighten. The first fall report from the wintering grounds indicated that record high numbers of Aleutians—as many as 2,700—have successfully made the migration to California. This is a 35% increase over last years highest population estimate. Of the banded geese observed thus far, 15 are birds that were among the 350+ geese released this August (as a recovery action) in the western Aleutians.

The migration route utilized by the Aleutian flock continues to be an enigma. As in the past years, no observations of Aleutian geese migrating between the breeding grounds and the coasts of California and Oregon have been reported.

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	23	756

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 11 animals
9 plants

Number of Critical Habitats listed: 50
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 44
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

November 30, 1981

U.S. SPECIES CURRENTLY PROPOSED

Common Name	Scientific Name	When Proposed	C.H. proposed
MAMMALS			
★ Jaguar (E)	<i>Panthera onca</i>	7/25/80	no
★ Margay (E)	<i>Felis wiedii</i>	7/25/80	no
★ Ocelot (E)	<i>Felis pardalis</i>	7/25/80	no
BIRDS			
★ Albatross, short-tailed (E)	<i>Diomedea albatrus</i>	7/25/80	no
★ Parrot, thick-billed (E)	<i>Rhynchopsitta pachyrhyncha</i>	7/25/80	no
REPTILES			
Gecko, Monito (E)	<i>Sphaerodactylus micropithecus</i>	10/22/80	yes
FISH			
Chub, Borax Lake (E)	<i>Gila boraxobius</i>	10/16/80	yes
Chub, Chihuahua (E)	<i>Gila nigrescens</i>	12/15/80	yes
CRUSTACEANS			
Amphipod, Hay's Spring (E)	<i>Stygobromus hayi</i>	7/25/80	no
Isopod, Madison Cave (T)	<i>Antrolana lira</i>	10/6/80	no
Shrimp, Kentucky Cave (E)	<i>Palaemonias ganteri</i>	10/17/80	yes
PLANTS			
Akoko "Ewa Plains" (E)	<i>Euphorbia skottsbergii</i> var. <i>kalaeloana</i>	9/2/80	no
Malheur wire-lettuce (E)	<i>Stephanomeria malheurensis</i>	10/31/80	yes
Milk-vetch, heliotrope (E)	<i>Astragalus montii</i>	1/13/81	yes
Navasota Ladies'-tresses (E)	<i>Spiranthes parksii</i>	6/18/80	no
Panicgrass, Carter's (E)	<i>Panicum carteri</i>	1/30/81	yes
Pennyroyal, McKittrick (T)	<i>Hedeoma apiculatum</i>	8/15/80	yes
Phacelia (E)	<i>Phacelia formosula</i>	9/2/80	no
Pogonia, small whorled (E)	<i>Isotria medeoloides</i>	9/11/80	no
Silverling (T)	<i>Paronychia argyrocoma</i> var. <i>albimontana</i>	10/27/80	no

E = Proposed as Endangered
T = Proposed as Threatened
★ = Foreign populations listed as Endangered

FOREIGN CONSERVATION

Continued from page 3

Such bilateral activities will be reviewed in future BULLETIN articles.

There is also a growing awareness within the private sector of the global interdependence of human, wildlife, agricultural, energy, and mineral resources. For example, the International Crane Foundation, National Audubon Society, National Wildlife Federation, Holy Land Conservation Fund, and World Wildlife Fund-US have all taken steps to strengthen their international interests, and the International Affairs Staff has formed working partnerships with each of these groups.

International demand for U.S. assistance in conservation continues to mount. In recent weeks, I have received a minister from West Africa seeking to prevent U.S. timber interests from destroying the last havens of wildlife in his country, and Europeans anxious to share their knowledge and experiences with acid precipitation. I have met with Latin American counterparts to our Service who lamented our near total lack of knowledge regarding their countries and what they are doing to protect migratory species shared with North America. I have heard the urgent appeal of a U.S. Ambassador in Central Africa asking the Service to help rescue one of the last viable populations of the Endangered black rhino in the wild—a mission which, if it is to be successful, must be accomplished within 3 years.

So, although the focus of Service activities seems predominantly domestic, as long as wildlife migrates, pesticides spread, winds and waters move, and the interdependence of the natural system remains, there will be an international mission for us. And, as long as we have the expertise to conserve America's genetic diversity, there will be a global demand for it.

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

NEW PUBLICATIONS

Wildlife Monograph No. 80 (Supplement to *The Journal of Wildlife Management*, Vol. 45, No. 4, October 1981), "Dynamics, Movements, and Feeding Ecology of a Newly Protected Wolf Population in Northwestern Minnesota," by Steven H. Fritts and L. David Mech was published by the Wildlife Society. Copies are available for \$3.00 from the Wildlife Society, 5410 Grosvenor Lane, Bethesda, Maryland 20814.

"Endangered Means There's Still Time," an illustrated (black and white) booklet which explains the Endangered Species Program, is now available for \$2.50 from the Superintendent of Documents, U.S. Government Printing Office Washington, D.C. 20402 (Stock # 024-010-005-26-2). Single complimentary review copies may be requested by writing the Publications Unit, U.S. Fish and Wildlife Service, 18th and C Streets, N.W., Washington, D.C. 20240.

"Endangered Marine Turtles of the Gulf Coast" is now available from the Albuquerque, New Mexico, Office of Endangered Species.

A special report entitled "Plants Protected by the Convention on Interna-

tional Trade in Endangered Species of Fauna and Flora: A List of Plants Reported in Trade, Including Common Names and Synonyms," prepared by the International Convention Advisory Commission (ICAC) is now available. Copies may be requested by writing Mr. Thomas McIntyre, International Convention Advisory Commission, Chairman, Room 713, FB-1, 6505 Belcrest Road, Hyattsville, Maryland 20782.

The Proceedings of the Symposium of the 1980 Desert Tortoise Council are now available for \$8.00 per copy. Countries other than the U.S., Canada, or Mexico add \$1.00 per copy for postage and handling for surface mail, or \$3.00 per copy for airmail. (U.S. drafts only, please.) Make check or money order payable to the Desert Tortoise Council and mail to 5319 Cerritos Avenue, Long Beach, California 90805.

Xerces Slide Collection

A set of 83 color transparencies of endangered arthropods is now available from the Xerces Society. A listing—with code numbers—of the available slides (sold for \$.60 each, plus postage) can be requested by writing Larry Orsak, Department of Entomology, University of California, Berkeley, California 94720. Essential information on the transparency subject appears on each slide. In addition, each slide ordered will be accompanied by an information sheet on the transparency subject. Presently, the Xerces slide collection includes six Endangered butterflies, one Threatened beetle and one Threatened moth, four extinct butterflies, and an array of other rare butterflies.

December 1981

Vol. VI No. 12

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN VOLUME 6 / Index is missing
from our collection.

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Early Hearings Begin Reauthorization Process

Oversight hearings to examine the implementation of the Endangered Species Act of 1973 were held by the U.S. Senate on December 8 and 10, 1981. Testimony received at those sessions, and at hearings to be conducted by the U.S. House of Representatives in early 1982, will assist the 97th Congress with the pending reauthorization of the Act.

Before May 15, 1982, both the House and the Senate will have completed their analyses of the Act and, most likely, will have developed draft legislation to amend it, as needed. Final legislation should be signed by October 1, 1982, the expiration date of the current Act.

Robert A. Jantzen, Director of the U.S. Fish and Wildlife Service (FWS), was the first person to testify before the Senate Subcommittee on Environment and Public Works. Jantzen reported on FWS's progress in implementing the Act and, in particular, the Endangered Species Act Amendments of 1978 and 1979. He promised that specific recommendations regarding possible new amendments to the Act would be made to Congress by the Department of the Interior following completion of the internal review of the legislation then underway. Ronald E. Lambertson, Associate Director-Federal Assistance and Endangered Species Program Manager, joined Jantzen in presenting the testimony.

Implementation Since Amendments

FWS testimony focused on three areas of change mandated by the 1978 and 1979 amendments—(1) listing, (2) recovery, and (3) consultation. Jantzen reported that FWS and the National Marine Fisheries Service (NMFS) had published joint final regulations which formalize the requirements of the amendments as they relate to Section 4 of the Act (listing). In order to respond to the requirements for economic analysis of Critical Habitat designations, Jantzen reported that an economic staff has been added to the Office of Endangered Species and that instructional guidelines and training have been carried out so that staff biologists can prepare most analyses.

Another major change made by Con-

gress in the Act was to require the Department to develop a recovery plan for all listed species, unless it is determined that such a plan will not promote the conservation of the species. Jantzen reported that FWS now has 44 approved plans, 23 agency drafts, and 24 technical drafts and that the major portion of the work in this area has occurred since November 1979. He said that FWS hopes to have at least 40 plans submitted for approval in fiscal year 1982.

The third major change made by Congress in the Act concerned the consultation process under Section 7. The intent of Congress in amending the Act in 1978 and 1979 was to provide for more direct involvement of FWS at the initial stages of Federal planning, so that potential problems could be surfaced at the earliest possible time in order to avoid delays. Jantzen reported that as a result of the changes "the consultation process is going very smoothly in the vast majority of cases." He stated that

while new regulations incorporating the Section 7 changes made in 1978 and 1979 have not yet been published in the *Federal Register*, either letters or memoranda have been sent to all Federal agencies informing them of changes required by the Act.

Critical Habitat Issue

The second portion of Jantzen's testimony was a summary of the review process in which the Department was concurrently involved. (See accompanying story on Interior's review.) One of the issues which surfaced during the review and about which Jantzen spoke was whether it is desirable to continue to designate Critical Habitat—a provision of the Act intended to assist Federal agencies in identifying the location of protected species. "The concept of Critical Habitat has often been perceived by the public," Jantzen said, "as tantamount to the designation of an invi-

Continued on page 3

Department Completes Review Of Endangered Species Act

A thorough statutory and regulatory review of the Endangered Species Act of 1973, conducted by the Department of the Interior during the final quarter of 1981, was recently completed. Recommendations resulting from the review will be submitted to the Office of Management and Budget around the middle of January 1982.

The review was initiated on June 1981 when the Service began collecting information in preparation for Spring 1982 Congressional reauthorization oversight hearings on the Act. In August 1981, when Vice President Bush included the Act in a list of regulations to be reviewed under Section 3(i) of Executive Order 12291, the Department combined the regulatory review process required by the Order with the reauthorization preparation already under way.

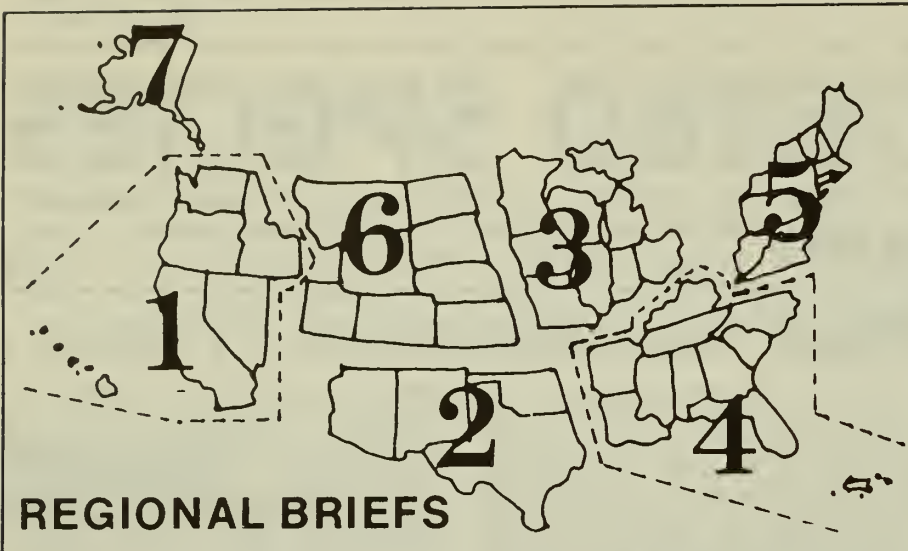
The working group which accomplished the review executed a work plan which was approved by the Office of Management and Budget in mid-Sep-

tember. The plan included a list of approximately 80 issues identified by the group itself, along with additional issues identified as the review continued.

An initial request for public comments was included in a *Federal Register* notice, published September 18, 1981. Letters transmitting this notice and copies of E.O. 12291 were sent to Federal agencies, State fish and game agencies and private organizations. Regional offices of the Service were also asked to comment. Eighty comments were received in response to the *Federal Register* notice.

By far, most States (24 responses) supported retention of the Act and continuing or increased enforcement of its provisions. Dissatisfaction with the provision or administration of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which is implemented by the Act, was the subject most discussed

Continued on page 8



Endangered Species Program regional staffers have reported the following activities for the month of December:

Region 1—Surveys of light-footed clapper rails (*Rallus longirostris levipes*) in Baja California, Mexico, were

begun during the summer of 1981. Barbara Massey and Dick Zembel censused (using vocalization mapping during evenings) one-fourth of the suitable habitat at El Estero, Ensenada, and heard 68 pairs of rails. In less than one-fifth of the saltmarsh at Bahia de San

**U.S. Fish and Wildlife Service
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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2**: Arizona, New Mexico, Oklahoma, and Texas. **Region 3**: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4**: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5**: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6**: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7**: Alaska.

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Quintin they heard 107 pairs. Projection of these partial counts yields a rough minimum estimate of 800 pairs of clapper rails residing in the two saltmarshes. Massey and Zembel accomplished this field work on their own time and initiative.

On December 1, 1981, the Boise Area Office hosted a meeting of the Northern Rocky Mountain Wolf Recovery Team members, wolf researchers, and representatives of Idaho sheep and cattle associations. The meeting provided an informal means of keeping livestock managers up-to-date on the wolf situation in Idaho, and of allowing livestock representatives to ask questions and express their concerns about wolves and wolf recovery plans.

A population of more than 5,000 plants of *Euphorbia skottsbergii* var. *kalaeloana* was recently discovered on the Naval Air Station at Barbers Point, Oahu, Hawaii. The discovery occurred during a Corps of Engineers contracted census of the taxon. Prior to the survey, it was believed that the total number of the species was approximately 1,000, one sixth of the now known population. The plant was proposed for listing as Endangered in the September 2, 1980, *Federal Register*.

Endangered species teams from Boise and Billings met in Jackson, Wyoming, with people interested in bald eagles of the Yellowstone Ecosystem. At this meeting the Yellowstone Ecosystem Bald Eagle Working Group was formed.

Region 2—Jack Woody and David Bowman attended the annual Kemp's Ridley Sea Turtle Project review at the Gladys Porter Zoo in Brownsville, Texas. Representatives from the National Marine Fisheries Service, National Park Service, Texas Parks and Wildlife Department, and Instituto Nacional de Pesca of Mexico also attended. Events and progress to date were reviewed and tentative plans for the coming season were made.

Economic and biological data for the possible listing of the bluntnosed shiner (*Notropis simus*) and the Little Colorado River spinedace (*Lepidomeda vittata*) is being gathered by the region. Letters of inquiry are being sent to State game and fish departments, irrigation districts, clearing houses, and Federal agencies possibly having projects in Arizona and New Mexico, the States where the two species are found.

Region 5—A technical draft of the Chittenango Ovate Amber Snail (*Succinea chittenangoensis*) Recovery Plan was completed by New York State biologist Patricia Riexinger and submitted to the regional office on New Year's eve.

Bald eagle shooting losses were up sharply in Maine in 1981. An intense public education effort is being planned

jointly by State and Federal governments and the University of Maine, Orono. The effort will include some television spots about the eagle's plight.

Special recognition is given to the Nature Conservancy (TNC) because of their efforts to protect several unlisted candidate species. *Isotria medeoloides* (small whorled pogonia) and *Eupatorium leucolepia* (white bracted-boneset) are two examples of plants that now have more secure habitat (in New Jersey and Massachusetts, respectively) because of TNC's untiring efforts.

Region 6—The Peregrine Fund at Fort Collins, Colorado, hatched 73 American peregrine falcons (*Falco peregrinus anatum*) eggs in 1981. This resulted in the attempted release of 59 young at 16 sites in Colorado, Utah, Wyoming and Montana. At least 49 of the birds were alive after they had been flying for about one month. Predation by golden eagles (*Aquila chrysaetos*) and great horned owls (*Bubo virginianus*) was the major cause of the loss of released birds.

At least 11 peregrines released in previous years returned to release sites. Of these, two adult/subadult pairs were seen in Colorado. The released birds are not known to have produced any young.

EARLY HEARINGS

Continued from page 1

olate preserve, which would forbid or curtail all human activities in the designated area. Because of this misperception, there has often been strong resistance to Critical Habitat designations by local residents and commercial interests." In response to this concern, Congress in 1978 required that an analysis be performed prior to the establishment of Critical Habitat to determine the economic impact of the designation. Jantzen summarized the situation saying, "As a result of public resistance and the analysis requirements of the 1978 amendments, Critical Habitat designation has added significantly to the complexity of the listing process. Some commentators feel that due to these problems, Critical Habitat should be eliminated, while others feel that it should be retained."

William H. Stevenson, Deputy Assistant Administrator for Fisheries (NMFS), testified on behalf of the Department of Commerce regarding NMFS's activities conducted under the Act. Stevenson summarized his testimony by stating, "I believe that the Endangered Species Act has worked well with respect to marine species. Although some issues remain, generally we expect to resolve them administratively."

In addition to testimony from Federal agencies, Senator John H. Chafee

(R-RI), subcommittee chairman, and Senator George J. Mitchell (D-ME) received testimony from 14 other witnesses representing State governments, private industry, conservation groups, and academia.

Allegations That Act Causes Conflict

Testimony from groups representing interests in the Western States, in particular, portrayed the Act as a source of conflict and as having critical flaws. The Western States Water Council, an organization of representatives appointed by the Governors of 12 Western States, and the Western Regional Council, a group said to represent the business community of the Intermountain States, expressed particular difficulty with implementation of Section 7 of the Act. These groups complained of added costs incurred by developers when projects were held up by the consultation process, of ill-defined consultation steps, and of lack of consideration given to the "action agency's" primary purpose. Both groups also expressed concerns over what they regard as a secondary position traditional State water rights seem to be taking to the Fish and Wildlife Service in the Service's Section 7 biological opinions. The Water Council recommended that Section 2 of the Act be made more flexible—that it be amended to state that "the conservation of endangered species should not be automatically undertaken at all costs, but should be considered in concert with other national goals." In particular, they recommend that the Act be amended to expressly state that it will not be used to allocate water, but that such allocations will be accomplished under State laws.

Counter Testimony

The above position of the Western States groups was countered by the testimony of 20 conservation groups. The Environmental Defense Fund (EDF), National Audubon Society, National Wildlife Federation, and Society for Animal Protective Legislation presented testimony at the hearings; EDF and Audubon represented a coalition of 18 conservation organizations.

The National Audubon Society stated in its testimony that over a 3-year period during which the Fish and Wildlife Service conducted 9,673 consultations with Federal agencies on proposed actions, only 154 of them (1.6%) were found to potentially jeopardize. (Almost all of the 154 jeopardy opinions were able to be resolved through the development of reasonable alternatives or through project modification.) The National Wildlife Federation testified that, in terms of specified time frames, the Section 7 consultation process was working well. The FWS averaged 78 days (2.6

months) per consultation, less than the 90 days allowed by law. The Federation testified that the preparation of a few opinions did exceed the 3-month period, but that was infrequent and usually occurred where an extension had been mutually agreed to by the Service and the consulting agency.

Mr. Kenneth Berlin, speaking for the National Audubon Society, countered the Western State's water rights issue. "The Endangered Species Act cannot stop the extinction of water dependent species if there is an inadequate flow of water available to them—there is no economic justification for such extinctions."

The conservation groups made an overall plea for continued strong endangered species legislation; however, they were critical of the 1978 and 1979 amendments to the Act, saying that they "took too much time to implement." Additionally, they expressed considerable dissatisfaction with the lack of actions completed under Section 4 (listings and Critical Habitat determinations) during 1981. They suggested that listing actions be based solely on biological data and that economic considerations, such as those called for by the 1978 amendments, be considered later, if needed, during consultations or exemption procedures.

Academia For Species Diversity

Three members of the National Academy of Sciences, Dr. Edward O. Wilson of Harvard University, Dr. Thomas Isner of Cornell University, and Dr. Peter Raven of the Missouri Botanical Garden, all gave strong testimony in support of the conservation of so called "lower life forms." Wilson called for a more comprehensive conservation ethic and an awareness of each species as a part of our natural heritage. Raven called the destruction of species for short-term economic gain a "radical position" and gave an example of recent research with the plant genus *Oenothera* which could hold a key to coronary disease cures. Isner reminded the subcommittee that 40% of our modern day drugs contain substances found in plants, and that there is no end to the potential for additional discoveries. Thus far, he pointed out, only 2% of known plants have been tested even partially for their chemical content. Commenting on the rate of species extinction, Isner stated that we could expect to lose one-fourth of the world's species over the next 20 years. Dr. Stephen Kellert of Yale University testified on the attitudes of Americans toward endangered species conservation.

During the hearings, numerous witnesses reiterated the warnings of Under-Secretary of State James L.

Continued on page 6

Western Hemisphere Convention: International Framework for Wildlife Conservation

Part II in a series on the endangered species activities of the Service's International Affairs Office.

by Curtis Freese

More than 140 plants and animals on the United States List of Endangered and Threatened Species are found in the 31 nations of Latin America and the Caribbean. Many more vulnerable species are to be found on the endangered species lists that some of these countries have developed for themselves. To fulfill the Service's responsibilities as one of 17 parties to the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, the Western Hemisphere Program of the Service's International Affairs Office is cooperating in a variety of activities with countries throughout the Latin American and Caribbean region. Included are projects to assess the status of endangered species, work toward the recovery of endangered populations, curb the threats to additional populations and species, and enhance the capabilities of wildlife institutions in those countries.

Because of geographical proximity, the U.S. and the Latin American/Caribbean region have much in common with regard to their flora and fauna, the problems and threats that confront these resources, and the necessary conservation measures. There are, of course, many species, including endangered ones, whose geographic ranges encompass both the U.S. and countries of Latin America and the Caribbean. Certainly the most significant wildlife resources the U.S. shares with Latin America and the Caribbean, in terms of numbers, are the migratory animals. Migratory birds, constituting more than 330 species that move south every North American winter, are perhaps the most conspicuous. Other taxonomic groups, however, also are significantly represented among these shared migrants, including the Mexican free-tailed bat, monarch butterfly, endangered grey whale, and six species of marine turtles (all six listed by the U.S.).

Not so immediately obvious today are the numerous historical ties, established through biological evolution, that linked north to south. The taxonomic affinities from this linkage can be of tremendous importance for endangered species conservation, as exemplified by the role that the Andean condor is currently playing as a surrogate experimental animal in the recovery program

for the much more endangered California condor.

Identifying the Problems

The problems facing threatened and endangered species in Latin America and the Caribbean are essentially the same as those confronting North American wild animals and plants—loss of habitat, excessive exploitation of populations, and environmental contamination. Habitat destruction ranks at the top of the list. The habitat that is disappearing most rapidly, tropical forests, also houses a greater number of species, including those currently endangered, than any other habitat in the region. Estimates are that 60,000 to 100,000 square kilometers (an area somewhere between the sizes of West Virginia and Virginia) are being lost annually in the New World tropics due primarily to the spread of agriculture and logging. Given the fact that many tropical species have very small geographical distributions, it is evident that thousands of tropical forest-dwelling species will be lost by the end of the century if present trends continue. Other habitats, such as wetlands and natural grasslands, are also being lost or greatly altered at unknown rates.

International commerce for the pet trade, hobby collectors, and animal products (such as skins), has led to critically low population levels of several species of parrots, macaws, cats, crocodilians, orchids, cacti, bromeliads, and other species in Latin America and the Caribbean. At the same time, subsistence hunting has drastically reduced populations of animals such as the larger primates and iguanas; selective logging has also reduced trees such as the endangered Guatemalan fir.

For large areas of tropical America, the first order of business in evaluating endangered species problems has to be an inventory of existing species. Indeed, in the world's tropical forests, it is estimated that perhaps only one sixth of all species have even been scientifically described and named. Therefore, in countries such as Paraguay, there is a push to catalog native flora and fauna. At the request of the Paraguayan government, the Service is cooperating with Peace Corps volunteers to provide technical assistance in developing a biological inventory, and in establishing their first national museum of natural history. (The Service has completed architectural plans for the new museum, and construction is expected to begin during 1982.) Service scientists are



Inside a Peruvian tropical hardwood forest.

Photo by C. Freese

making periodic visits to carry out inventory expeditions with Paraguayan counterparts and students who receive hands-on experience and training in basic field inventory, taxonomy, and curatorial techniques. A new species of lizard and several new insects have already been discovered. Through the help of the Service in obtaining other sources of international support for the project, several of the Paraguayan biologists will be coming to the United States in 1982 for more advanced training.

Training Wildlife Professionals

Because of the severe shortage of personnel in Latin America and the Caribbean trained in wildland planning and wildlife management, training is a high priority in our cooperative programs. We have developed what we anticipate to be an annual course on the function and management of wildlife refuges for Latin American/Caribbean wildlife and wildland professionals. In 1981, six trainees from Guatemala, Costa Rica, Panama, the Dominican Republic, Ecuador, and Brazil visited 10 national wildlife refuges in the U.S. and other Service facilities during this one-month course. The National Wildlife Federation and the World Wildlife Fund-U.S. provided important financial and technical support in this training effort.

The Service also participates in wildland training efforts organized by the Wildland and Watershed Project of

the Tropical Agronomic Center for Research and Training, a Central American institution based in Costa Rica that provides assistance and coordination in conservation projects throughout the seven countries of Central America. By providing Spanish-speaking instructors and financial support, the Service has helped train more than 50 wildland managers from at least a dozen countries in the last 2 years.

Since destruction of habitat is the major threat to species survival in Latin America and the Caribbean, national wildlands programs are of high priority. These lands may be in the form of national parks, wildlife refuges, forest reserves, faunal production areas, or watershed reserves. The experience of the Service in managing the National Wildlife Refuge System is of considerable value to other countries that are establishing wildlands systems. For example, in response to a request from the Government of Costa Rica, the Service sent three specialists in refuge planning from Minnesota Valley NWR to that country to help them develop a master plan for their first national wildlife refuge, and to train Costa Ricans in planning techniques. This new refuge is habitat for the scarlet macaw, several iguanas, and the endangered Central American tapir, among other species. More than 85 species of migratory birds from the U.S. also have been sighted.

Another Service specialist responded to Peru's request for help in drafting a preliminary development plan for its

Pacaya-Samiria National Reserve in northern Amazonia. Some of the more notable species found there include the jaguar, ocelot, various parrots and macaws, at least three species of crocodilians, and ten species of primates.

Potential Economic Resources

As the interest in crocodilians in Latin America indicates, many countries view the consumptive use of animals and plants as a compatible and important tool in their conservation efforts. Perhaps the best known example is the vicuna in Peru. Vicuna populations in that country were at critically low levels only a few years ago, but an intensive conservation program has resulted in recovery to the point where controlled harvesting of the vicuna for its meat and valuable wool is again possible. This use, in turn, is important justification for the Peruvian government's continued conservation efforts.

New efforts are underway throughout the region to apply this concept of conservation through sustained yield, including the management of endangered species such as the Amazon River turtles for their eggs and meat, crocodiles for their skins and meat, marine turtles for their eggs, meat and other products, iguanas for their meat, and primates for biomedical research. For example, Ecuador is interested in establishing a research center to develop management technologies for the sustained yield harvest of Amazonian wildlife resources. The Service has provided technical expertise by helping to develop a proposal and plans for such a research station.

Recovery Program Research

Considerable joint research and management on endangered species has been conducted with Mexico's wildlife department, with some very notable successes. The masked bobwhite once occurred in southern Arizona, but up to a few years ago populations remained only in neighboring Mexico. Under the auspices of the U.S.-Mexico Joint Committee on Wildlife Conservation, a project was begun to capture some masked bobwhites in Mexico, transfer them to the Patuxent Wildlife Research Center for captive propagation, and then release them in rehabilitated, protected areas of their former range in Arizona. This objective has been accomplished, and the captive population at Patuxent is now supplying birds to Mexico for their own captive breeding and reintroduction program. The Mexican grey wolf, also once found in the southwestern U.S. but represented now in the wild by a small, diminishing population in northern Mexico, is the subject of a cooperative captive breeding project.

Continued on page 7



Tropical deforestation is a big problem—loss of habitat and loss of species diversity.
Photo by C. Freese

EARLY HEARINGS

Continued from page 3

Buckley at the Strategy Conference on Biological Diversity, November 16, 1981. Buckley stated, "We are still too ignorant of ultimate consequences to understand in full the urgent need to protect even the most inconspicuous forms of life so that we do not diminish the rich variety of biological resources that continue to exist."

State Recommendations

The International Association for Fish and Wildlife Agencies (IAFWA), representing all the States, asked that Section 6 of the Act be amended to ensure at least minimum funding for State programs. (All funding for State programs has been eliminated from the fiscal year 1983 budget). Speaking for the IAFWA, Mr. William S. Huey reminded the subcommittee that a good Federal-State working relationship is essential to a successful endangered species program. (IAFWA was joined by the conservation groups in its request for sustained Section 6 funding.) Mr. Huey also made a recommendation to adopt language in the Act which would allow the States to introduce experimental populations of protected wildlife without "being penalized by Federal establishment of Critical Habitat and other protective features of the Act."

Justice Recommendations

Assistant Attorney General Carol E. Dinkins reported that during the 2-year existence of the Justice Department's Wildlife and Marine Resource Section, the lack of clarity in several sections of the Act has caused some interpretive confusion. She recommended for clarification: (1) the extent of permissible State regulation of Federally-listed species; (2) the meaning of "proper purposes" as it relates to exempted wildlife under the Act's "Grandfather Clause"—Section 9(b)(1), and (3) the necessity of "proving knowledge of violations" on the part of those possessing illegal wildlife under Section 9(a)(1)(D) and 9(c)(1).

Dinkins pointed out that, in contrast to the citizen suit provision in other environmental laws, Section 11(g) of the Act allows private parties to sue to enjoin any violation of the Act. (Most environmental laws generally limit enforcement rights to enjoin violations of specific statutory prohibitions.) Dinkins stated, "It (the Act) permits suits not only to enjoin the prohibitions of Section 7 and the consultation requirement of Section 7, but also to set aside regulatory actions taken under the Act." Speaking for EDF, Bean urged that this right of citizens to initiate lawsuits "against those

who violate or fail to enforce the Act" be preserved.

Bobcat Issue

Dinkins also warned that the November 1981 interpretation of Section 8(a) by the District of Columbia Court of Appeals may be contested. This interpretation held that the Federal government must have both a reliable estimate of State bobcat populations and information concerning the number to be killed in a particular season before allowing bobcat exportations, even though neither the Act nor the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has specific export standards.

State fish and game agencies, represented by IAFWA, expressed great difficulty with the "no detriment" finding as interpreted by the Court of Appeals ruling which required population estimates for export of species listed on CITES appendices in addition to the bobcat (i.e. lynx and river otter). IAFWA recommended that the Act be amended to allow a determination by the State agency permitting the harvest of a State managed Appendix II species to constitute a "no detriment" finding under Article IV of CITES. IAFWA was supported in this recommendation by the Wildlife Legislative Fund of America and the Pet Indus-

try Joint Advisory Council. These parties joined in a second recommendation to amend Section 8 so that the United States would be mandated to take reservations under CITES procedures when substantial evidence indicates that domestic populations listed in the CITES appendices are not Endangered or Threatened. Stating a contrasting position, Christine Stevens cited the demise of the blue whale as a situation parallel to that of the bobcat and warned that "it is not easy to bring back a bobcat population once it has been too far depressed by trapping."

Comments of the Senator

Senator Chafee asked numerous questions during the 2 days of oversight hearings and gave strong support to the Endangered Species Act. When responding on the second day of hearings to the complaint that biological consultations and assessments took valuable time and considerable amounts of money, Senator Chafee responded: "Yes, there are delays. But endangered species are finite—when they are gone, that's the end. Sometimes there might be dollar costs; the balance works two ways. We must weigh conservation against costs . . . If we err, we must err on the side of attempting to preserve species."

Florida Panther Recovery Plan Approved

On December 16, 1981, the Service's Director approved a recovery plan for the Florida panther (*Felis concolor coryi*). The overall goal of the plan is to prevent the species' extinction and to reestablish viable populations in as much of its former range as feasible.

The present status of the Florida panther over most of its historical range is poorly known. The animal once ranged from eastern Texas east to Florida and as far north as Arkansas and parts of Tennessee and South Carolina. Today there is consistently documented evidence of the species continued presence only from the Fakahatchee Strand, Big Cypress National Preserve, and Collier-Seminole State Park areas. Other reports indicate that the panther may still exist in other parts of Florida and in portions of Arkansas and Louisiana.

The decline of the Florida panther probably began with the early settlers who attempted to destroy them at every opportunity because of livestock losses and fear of the animals. Although legally protected since 1958, illegal kills, highway mortality, and habitat loss probably continue to depress the population below potential carrying capacity.

Recovery Efforts

The basic factor limiting the conservation and management of the Florida panther is lack of information on the species' status and distribution. To remedy this situation, the plan recommends additional field investigations, as well as the establishment of a Florida Panther Record Clearinghouse in each State within the species' former range where all available data would be collected and reviewed. (The Florida Game and Fresh Water Fish Commission has already established a panther clearinghouse—see the July 1981 BULLETIN for more information.)

The plan further recommends that once existing populations are located and have been studied to determine habitat requirements, habitat necessary to maintain these populations should be protected. Public education is established in the plan as an important follow-up task to gain public acceptance for the recovery efforts. Implementation of the plan will be initiated by the Service's Atlanta Regional Director and carried out through the Atlanta Regional Endangered Species Office.

Cactus Trade Meeting

by Michael Bender

A meeting to discuss the cactus trade, its impacts on wild populations, and potential conservation measures was held in Tucson, Arizona, December 7-9, 1981. Among those attending were representatives of Federal and State agencies, universities, private conservation groups, commercial cactus growers, and the Arizona-Sonora Desert Museum. The conference was sponsored by the Service's Albuquerque Regional Office, and was planned as the first in a series of meetings on the cactus trade.

One of the main purposes was to create a better understanding among all those involved in cactus trade and conservation of the various laws, international treaties, and regulations now in effect. Presentations on the varied protection offered cacti by the Endangered Species Act, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, and the recent amendments to the Lacey Act (see the December 1981 BULLETIN) were made by the Service. Explanations by State representatives of cactus laws and programs in Arizona, New Mexico, and Texas followed.

Discussions held near the end of the meeting focused on several points of

special concern. There was general agreement that the condition of many cacti populations in the wild continues to deteriorate despite existing programs, but it was also recognized that a much better data base is needed to facilitate regulatory decisions (especially those conservation measures required under the Act, the Western Hemisphere Convention, and CITES). Another topic of interest at the meeting was the possibility of devising a national cactus trade recovery plan, covering all native and foreign cacti subject to U.S. trade. Under the umbrella of such a recovery plan, common cactus problems such as research on artificial propagation to supply trade demand, enforcement, permits, salvage operations and rescue centers, and a variety of other areas could be coordinated as the trade supplement to individual species recovery plans.

Because enforcement of Federal and State cactus protection laws, already so difficult, is likely to be effected by further budgetary and personnel reductions, the participation of commercial growers in cactus conservation programs was seen as increasingly important. It was reemphasized that a major part of the cooperative effort is expected to be public education on the dangers to wild populations of collecting from the field, and the importance of buying cacti only of cultivated origin.

WESTERN HEMISPHERE

Continued from page 5

ect for reestablishing them in parts of their former range.

Researching the effects of pesticides on peregrine falcons and other migratory birds will begin in 1982 through the U.S.-Mexico Joint Committee. Possible contamination is also creating concern in agricultural areas of Costa Rica, where the Service is cooperating with government and university scientists in analyzing the eggs of wading birds for pesticide residues. Costa Rican scientists are currently initiating a research program on the brown pelican, and have requested the Service's assistance in analyzing eggs of this species.

Cooperation with Peru has been extremely important in carrying out one of the phases of the recovery program for the California condor. With the assistance of the Peruvian government, the Service is studying captive-born Andean condors released into the wild along Peru's isolated northern coast. Scientists hope eventually to apply the knowledge and techniques to future captive-bred California condors.

The Service is also participating in important research and management efforts for marine turtles in Latin America (including programs on both coasts of Mexico), particularly recovery of the Kemp's ridley. Research is also being conducted on the Olive ridley turtle along the Pacific coast of Costa Rica.

Technical Information Exchange

One of the least costly, but important and effective ways that the Service cooperates with other countries in the hemisphere on endangered species conservation is through the exchange of technical information. Access to published material data is often difficult in Latin America and the Caribbean; therefore, our office regularly sends technical information in the form of research reports, bibliographies, books, and other publications to some 20 countries in the region. Additional information is provided upon request. In return, we receive information from these countries which is of value to our own researchers and managers.

International cooperation of the type described above will become increasingly important in the future as countries of the Western Hemisphere strive to effectively use their limited resources in conservation efforts for the wild animals and plants we share. Because of the Service's wealth of expertise in wildlife research and management, and because this expertise is increasingly recognized and sought by wildlife institutions in Latin America and the Caribbean, the Service has a critical role in furthering this international effort.

RULEMAKING ACTION

December 1981

INTERSTATE TRADE IN Kangaroo Imports Authorized

A final rule which authorized the importation for commercial purposes of hides and parts of the red kangaroo (*Megaleia rufa*), the eastern gray kangaroo (*Macropus giganteus*), and the western gray kangaroo (*Macropus fuliginosus*) was published by the Service on April 29, 1981. In a December 31, 1981, notice the Service has interpreted this action as also authorizing interstate com-

merce in parts and products of these three kangaroo species.

The prohibition against interstate commerce in the Endangered Species Act of 1973 [(50 CFR 17.40(a))] applies only to unlawfully imported kangaroo. Since importation of these three kangaroo species is now lawful, interstate trade in their parts and products is also lawful.

New Publications

"Endangered and Threatened Species of Illinois: Status and Distribution," was published in January 1981 by the Illinois Department of Conservation. The volume contains 189 pages plus six appendices, forming a comprehensive scientific guide to endangered species of Illinois. Limited copies are available for distribution to those having a particular interest in the State's flora and fauna. To request a copy, write to the Endangered Species Program Coordinator, Division of Wildlife Resources, Department of Conservation, 605 Stratton Building, 600 North Grand Avenue West, Springfield, Illinois 62702.

"The Behavioral Ecology of the Komodo Monitor" by Walter Auffenberg reports the findings of a 13-month field study of the ecology and behavior of *Varanus komodoensis* (listed as Endangered under the Act). The study was conducted between July 1969 and July 1971 in the Lesser Sunda Islands group, Republic of Indonesia. The report (406 pages) is available for \$45.00 from University Presses of Florida, 15 Northwest 15th Street, Gainesville Florida 32603.

Materials featured in the "New Publications" column are presented for information purposes only. The mention of non-Federal government publications does not imply concurrence with their contents or with the philosophies of the various publishers.

DEPARTMENT REVIEW

Continued from page 1

by the States (14 responses). In most cases, State agencies disputed restrictions placed on international trade in certain U.S. species (notably bobcat, and river otter) or criticized the administration of the International Convention Advisory Commission (ICAC).

Other more general comments from the States included: (1) criticism of Federal involvement in areas of traditional

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	23	756

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 11 animals
9 plants

Number of Critical Habitats listed: 50
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 45
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

December 31, 1981

State management authority; (2) the reinstatement and greater continuity of funding for the State grant-in-aid program under Section 6 of the Act; (3) the need for continued compliance by Federal agencies with Section 7 and the need for greater State involvement in the Section 7 consultation process; and (4) the inappropriateness of the present economic analysis procedure required by Section 4 in the listing process.

Federal agencies most frequently commented on consultation procedures under Section 7, suggesting various technical or substantial changes in the proposed Section 7 implementing regulations.

Most environmental and scientific organizations (11 responses) supported retention and effective implementation of the Act. Two scientific groups urged a relaxation of permit procedures as they apply to museum specimens. These

groups disputed the appropriateness of economic and other impact analysis as a prerequisite to species listings.

Eleven responses were received from industrial and development interest groups. The most frequent specific concern among this group was that species only be listed based on adequate documentation, and that the Act not be used to further political goals.

Comments from several members of the academic community expressed disagreement with the new Service priority system which directs effort to vertebrate species before the so called "lower life forms" (i.e. plants and invertebrates). One commentator questioned the basis upon which the Service is emphasizing recovery efforts over listing efforts.

A summary of the issues which surfaced during the review was printed in the January 13, 1982, *Federal Register*.

January 1982

Vol. VII No. 1

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



POSTAGE AND FEES PAID
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ENDANGERED SPECIES

Technical Bulletin

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Recovery Plan Approved for Clear Creek Gambusia

The Clear Creek Gambusia Recovery Plan was approved by the Service on January 14, 1982. The Rio Grande Recovery Team which includes members from Texas Parks and Wildlife Department, New Mexico Department of Game and Fish, University of Texas, Oklahoma State University, University of Nuevo Leon and the Service prepared the plan.

The Clear Creek gambusia (*Gambusia heterochir*) was first collected on February 22, 1953, in Wilkinson Springs on the Clear Creek Ranch in Menard County, Texas. Listed as Endangered in 1967, it is only known to occur in the headwaters of Clear Creek located on the Clear Creek Ranch. The recovery plan identifies the major threats to the species as genetic and environmental competition with mosquito fish (*Gambusia affinis*) and potential development of its extremely restricted habitat.

Originally Clear Creek was a clear spring run that freely flowed about 5 km to its confluence with the San Saba River. Upper Clear Creek, which consists of a series of interconnected limestone springs originating from Edwards Aquifer, has been altered extensively for irrigation and domestic uses. Prior to 1900, a low, earth-concrete dam was built about 75 meters downstream from the headsprings. Three additional dams were built downstream from the original dam in the 1930's, ponding water to the base of each subsequent dam.

The Clear Creek gambusia has specific habitat requirements which restrict it to that part of Clear Creek with clear, sternohermal, low pH (6.1–6.5) waters having abundant aquatic vegetation composed mainly of an endemic, undescribed form of *Ceratophyllum* sp. Although at one time it may have been more widespread in the Clear Creek drainage, extensive collecting in 1956 and 1957 found this fish confined almost entirely to the spring-fed uppermost pool.

Where the Clear Creek gambusia and mosquito fish occur together, hybridization and competition for food occur. The mosquito fish generally associates with a eurythermal relatively alkaline environment in contrast to the requirements of the Clear Creek gambusia. However, its preference for warmer water causes a winter migration towards the head-spring where the Clear Creek gambusia is restricted. The first dam below the head-spring deteriorated over the years and has periodically allowed invasion of mosquito fish into the habitat of the Clear Creek gambusia. Repairs to the dam which were funded by the Service and carried out by recovery team members and associates in August and September 1979 have restored this barrier and at least temporarily blocked further immigration by mosquito fish.

A collection of rainwater killifish (*Lucania parva*) in Clear Creek in 1980 documents a recent new introduction and additional potential threat. Although a brackish water species, it is expected

to reproduce in Clear Creek and may compete for food and cover with the Clear Creek gambusia.

The Wilkinson family, landowners of the Clear Creek Ranch, have played a major role in conservation efforts for the species and have demonstrated a high level of environmental concern for the perpetuation of this fish. However, the ranch is presently for sale and the concern of future landowners cannot be predicted.

Recovery tasks identified by the plan for the recovery of the Clear Creek gambusia include further research into its biology, ecological requirements, and competition with the mosquito fish and rainwater killifish; protection of the headsprings habitat, maintenance of a captive population; possible restoration of the original habitat (i.e. the entire stretch of Clear Creek); and public information.

Implementation of the recovery plan will be initiated by the Service's Albuquerque Regional Director and carried out through the Albuquerque Regional Endangered Species Staff. Further information on the Clear Creek gambusia recovery effort can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87130 (505/766-2321).

Pupfish Removed from Endangered Species List

After a review of all available data, the Service has determined the Tecopa pupfish (*Cyprinodon nevadensis calidae*) to be extinct and has, therefore, removed it from the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 1/15/82). This action discontinues protection for the fish and its habitat provided by the Endangered Species Act of 1973, as amended.

The Tecopa pupfish, a tiny fish only about 1.5 inches long, was described in 1948 by Dr. Robert Rush Miller from the outflow streams of two springs (north and south Tecopa Hot Springs) north of the town of Tecopa in southern California. During the 1950's, remodeling and landscaping of the hot spring bath-houses resulted in the rechanneling and

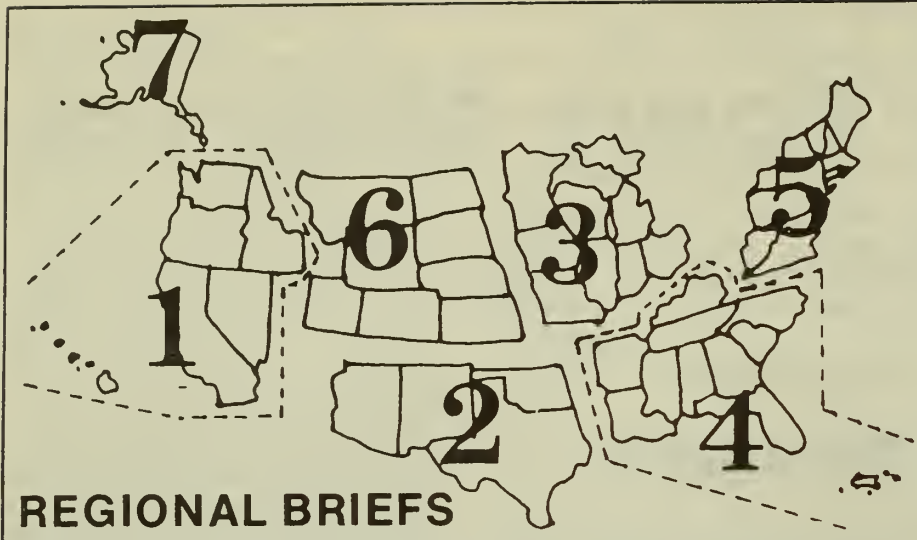
combining of two spring outflows, which in turn created unfavorable habitat for the pupfish.

The effects of habitat alteration, possibly combined with competition and predation from introduced fishes, caused such a precipitous decline in the population by 1969 that the fish was listed as Endangered by both the Federal and State governments in 1970. By 1972, it was reported to no longer occur at the type locality, and surveys in 1977 failed to locate any other population.

A proposal to remove the Tecopa pupfish from the Federal list of Endangered Species was published in the *Federal Register* on July 3, 1978. The California Department of Fish and

Continued on page 7

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CLEMSON



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of January:

Region 1—An artificial pond population of the Endangered Mohave tui chub (*Gila biocolor mohavensis*) at Fort

Soda, California, recently was extirpated. The cause of the die-off, which did not affect a nearby natural lake population of the chub, is unknown.

The Sacramento Area Office endangered species staff met with the remaining California Department of Fish

and Game Endangered Species Staff to coordinate programs for the coming year. Because of no new Section 6 funding in Fiscal Year 1982, California's Endangered Species Program will be greatly reduced. State biologists are resigning from Recovery Team Leader positions on at least two recovery teams, and the emphasis of staff time will be on processing State endangered species permits.

The final draft of the Southern Sea Otter Recovery Plan has been approved by the Director.

The Sacramento office has released a report on the results of the California mid-winter bald eagle surveys, 1979–1981. Approximately 700 to 900 bald eagles were counted annually. The California portion of the Klamath Basin supported almost half of the eagles in the State. Manmade reservoirs are the second most important habitat, supporting approximately 37 percent of California's bald eagles.

A revised edition of the *Bald Eagle Management Guidelines: Washington-Oregon* was issued in December 1981. The guidelines, created for use by landowners and land managers, describe restrictions in activities and management recommendations that should be applied around bald eagle nest and roost sites. The guidelines are advisory only, and past editions have been well received by the numerous private and governmental land managers who oversee bald eagle habitat in Washington and Oregon. Single copies may be obtained from the Area Manager, U.S. Fish and Wildlife Service, 2625 Parkmont Lane, Olympia, Washington 98502.

Region 2—Recently, 146 adult razorback suckers (*Xyranchea texanus*) were moved from Lake Mohave to the Dexter National Fish Hatchery as part of a cooperative program with the States of Arizona and New Mexico. Over one million eggs have been produced at Dexter, with several million more expected. Young razorbacks from these eggs will be stocked in the wild, or made available to the States for rearing or stocking in lieu of listing the species. (For more on the stocking program, see the September 1981 BULLETIN.)

Region 4—During the January meeting of the Columbia Dam Coordination Committee, the Tennessee Valley Authority (TVA) reported completion of its 2-year field study, which was designed to gather information for its Cumberlandian Mollusk Conservation Program. An evaluation of the distribution, host fish requirements, habitat, and potential translocation sites was conducted for two listed species, the Cumberland monkeyface pearly mussel (*Quadrula intermedia*) and the birdwing pearly

Continued on page 7

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Leopard Reclassified as Threatened in Southern Africa

After a lengthy review, the leopard (*Panthera pardus*) has been reclassified by the Service to Threatened in part of southern Africa (F.R.1/28/82). The change in status under the Endangered Species Act affects populations in Gabon, Congo, Zaire, Uganda, Kenya, and all African countries to the south. It will remain classified as Endangered in all other parts of its range, and leopards everywhere will be retained on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). A special provision of the final rule allows the importation of sport-hunted trophies legal-

ly taken from the reclassified populations, under the terms and conditions imposed by CITES. The importation of leopard products for commercial purposes, including the fur trade, was always the main threat to the species, and will continue to be prohibited.

Background

The leopard is the most widely distributed species of cat, occurring throughout most of Africa, and from Asia Minor to China, Korea, Japan, and Java, it is also found in India, Sri Lanka, and southeast Asia. Widespread poaching

and overexploitation of this cat for the fur trade, especially during the late 1960s, created an enormous drain on wild populations and led to its original listing in 1972 as Endangered under the Endangered Species Conservation Act of 1969.

On the basis of three major studies on the leopard conducted since the 1972 listing, which indicated that populations are stable or increasing in most sub-Saharan countries, the Service proposed on March 24, 1980, that those populations be reclassified to Threatened (see April 1980 BULLETIN). The

Continued on page 6

CITES NEWS—January 1982

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—

Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director-Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species.

The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Service Proposes Removal of Bobcat from Appendix II

The Service announced its determination that the bobcat (*Lynx rufus*) is inappropriately included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and its decision to submit a proposal to remove United

States and Canadian populations from Appendix II of CITES (F.R. 1/11/81). A preliminary notice which announced the intent of this proposal and requested public comments was published earlier (F.R. 9/14/81).

During the comment period for the

September 1981 notice, the Service received a total of 15 letters from persons and organizations: 12 in favor of removal of the bobcat from Appendix II of CITES and 3 opposed. Nine comments in favor of delisting were from State wildlife agencies of Alaska, Alabama, Arkansas, California, Florida, Nevada, New Mexico, Tennessee, and Texas. The Montana Wool Growers Association, the National Wildlife Federation, and the Texas Sheep and Goat Raisers Association also commented in favor of delisting. Comments against delisting were submitted by the Animal Protection Institute of America, the Defenders of Wildlife, Inc., and the Humane Society of the United States.

Defenders of Wildlife was the only group to submit detailed reasons for their position on the proposal. The Service responded in the January notice to each of Defenders eight points of contention. (Please consult the *Federal Register* [Vol. 47, No. 6, pp. 1242-1246] for the text of these responses.) The same document includes a summary of available information about the bobcat and a discussion of

Continued on page 6

Bobcat Rule Suspended

A final rule (F.R. 10/14/81) authorizing the export of bobcat (*Lynx rufus*) taken during the 1981-82 season is suspended by the Service for a 6-month period (F.R. 1/12/81). This action, taken to conform with the U.S. District Court injunction prohibiting the Service from authorizing the export of bobcat after July 1, 1981, became effective January 12, 1982.

On February 3, 1981, the District Court for the District of Columbia found the Office of the Scientific Authority's (OSA) guidelines for allowing export invalid and issued an injunction which prohibited the Service from authorizing export of the species under CITES. In light of this, the Service postponed the

effective date of its October 1981 final rule for 60 days while it sought vacation of the injunction. However, on December 15, 1981, the District Court denied the motion of the Service to vacate the injunction on grounds that OSA failed to promulgate guidelines consistent with a previous ruling by the U.S. Court of Appeals.

Accordingly, the Service remains under court injunction prohibiting the export of bobcat and suspends the October rule for 6 months. Further notice concerning the export of bobcat will be provided when information becomes available. (See the November 1981 BULLETIN for more information on the October 1981 rule.)

Cooperative Efforts Assist State

Very hot weather and bothersome mosquitos which plagued Reelfoot Lake in northwestern Tennessee this summer did little to squelch the enthusiasm of Dr. and Mrs. Arlo Smith, volunteers from the Tennessee Ornithological Society (TOS) and retirees from Southwestern University in Memphis. On their own time and at their own expense, this couple set up camp close to an observation tower at Reelfoot on June 22, 1981, and set about implementing an eagle hacking project which they had carefully planned in conjunction with the Tennessee Wildlife Resource Agency (TWRA).

The Smiths were given custody of three eaglets which were delivered to TWRA by the Fish and Wildlife Service and the Missouri Department of Conservation for the purposes of the project. (All three birds had been blown from nests in Minnesota and Wisconsin; the Wisconsin eaglet had received interim care at the University of Minnesota's raptor rehabilitation center.) TWRA placed the eaglets in an artificial nest at Reelfoot and commenced daily feeding. Dr. and Mrs. Smith assisted with feeding and monitoring the eaglets for 7 weeks. The Smiths were relieved on weekends by 11 other members of TOS who, in pairs, continued the feeding and observation procedures.

Each day members of TOS climbed the 54-foot ladder up the side of a cypress tree in order to enter the Observation Room. Here they spent long hours observing the eaglets which were on a hacking platform in a second cypress 90 feet away. The observers recorded information such as excitability, aggression, intimidation, alertness, wing-flapping, growth, preening, and posture. On August 6, the eaglets were released from the hacking platform.

The eaglets apparently migrated from the general area since radio contact with the birds was lost after 6 days of release. On December 15, the Wisconsin eaglet was found in South Dakota, injured by a trap from which it had been released. It was returned by Service employees to Dr. Patrick Redig at the University of Minnesota center. Upon determining that the eagle could not recover, Redig euthanized it. The whereabouts of the other two eaglets is unknown.



One of the Reelfoot eaglets—just released from the hacking platform on August 6, 1981.

Valuable data and experience was gathered through this project, and TWRA has hopes that through additional similar efforts nesting eagle populations can be re-established in Tennessee. No successful nesting has been known to occur in the State since 1961, when eagles nested at Reelfoot.

In addition to working with the Reelfoot project, TWRA and the Tennessee Valley Authority (TVA) have cooperated in another hacking project at TVA's Land-Between-the-Lakes. In 1980, when several eaglets became available to the State sooner than anticipated, TVA had the necessary resources to construct hacking and observation towers on short notice and eventually hacked both birds. In 1981, three captive-bred eaglets (two from Patuxent Wildlife Research Center and one from Columbus, Ohio Zoo) were hacked from the Land-Between-the-Lakes operation.

The osprey (*Pandion haliaetus*), listed for protection by the State, has also undergone a decline in Tennessee. However, 5 years ago it began making a comeback and in 1981, there were five known nests. A total of forty-seven 6-week old ospreys have been intro-

duced from the Chesapeake Bay (Maryland and Virginia) at 15 hacking platforms across Tennessee in a cooperative program with TVA. Members of TOS and others volunteered for daily feedings of the introduced ospreys.

The Tennessee Program

In 1974, the Tennessee State legislature passed the "Tennessee Nongame and Endangered and Threatened Wildlife Species Conservation Act" and assigned responsibility for its implementation to the Game and Fish Commission. During the same year, the Commission's name changed to TWRA, in order to reflect the agency's broader responsibilities. From 1974 through 1977, Tennessee's nongame and endangered species program (NG-ES) was implemented by one biologist, William Yambert. During 1978, the NG-ES program was handled by three full-time biologists: William Yambert, Robert Hatcher, and Thomas Grelen. Since early 1979, the program has been coordinated by Hatcher.

Regarding the hard work and enthusi-



This 3-inch fish is confined to a single manmade pond and a few headwater streams of eastern middle Tennessee.

asm of the Smiths and other members of TOS, Hatcher recently expressed gratitude: "We are fortunate to have many capable and interested people like the Smiths to help us with our endangered species needs. Many of our conservation efforts are carried out completely, or in cooperation with TWRA, by private citizens, conservation groups, Federal government agencies, and other State agencies. We work especially closely with the Tennessee Department of Conservation's Tennessee Heritage Program, and have cooperated in several projects with TVA, in particular."

Citizens Cooperate

TWRA has found that most landowners are receptive to protection of endangered species habitat if they recognize that they own something unique. TWRA has negotiated a total of 13 written cooperative agreements, and has about 10 more in progress. A number of oral agreements have also been established. TWRA has posted signs (see accompanying illustration) to alert passers-by about key habitat areas and to request their cooperation.

A very important cooperative agreement is one which has been reached with Joseph and Bertha Banks in Summitsville, Tennessee. A small manmade pond on their land contains 90 percent of the known barren's topminnow (*Fundulus* sp.). The Banks rec-

ognize the uniqueness of their situation and are anxious to protect these endangered fish. An agreement to protect the species and its habitat has been reached between the Banks, the TWRA, and the Nature Conservancy (TNC). The agreement maintains the Banks' rights as landowners, while simultaneously ensuring the protection of the topminnow.

Dr. David Etnier, the ichthyologist from the University of Tennessee who described the now well-known snail darter, has found very small numbers of the topminnow in two streams not far from the Banks' pond, in Meadow Branch and a tributary to Hickory Creek. In the fall of 1981, Etnier alerted TWRA that the water level in the Banks' pond was dangerously low. Accordingly, TWRA biologists removed most of the fish and placed them in aquariums. Recently, since the water level has again risen, the minnows were put back into the pond. Survival of the species depends on protection of water quality and quantity and the avoidance of channelization or gravel dredging.

The four sites in Tennessee where red-cockaded woodpeckers (*Picoides borealis*) are known to nest are all being preserved with land owner cooperation. Research is being done to determine optimum silvicultural methods for regeneration of preferred pine tree species which the birds use for nesting.

In order to avoid the sale and development of a site in Davidson County

where a black-crowned night heron (*Nycticorax nycticorax*) rookery has existed since 1908, TWRA, the Audubon Society, the Nature Conservancy, the TOS, and the Service cooperated to purchase the land. The species which is protected by the State, has only five known remaining nesting colonies, four of which are in east Tennessee.

Cooperative agreements are also being made with owners of caves which provide habitat for the Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) in order to limit human entrance to the caves during seasons of occupation. The Indiana bat exists in 10 caves in Tennessee; there are 67 gray bat caves with over 90 percent of the bats depending on a few caves for winter hibernation.

Other Program Activities

An initial top priority of TWRA's NG-ES program was to compile all available information about the status, limitations, and needs of Tennessee's rare wildlife. TWRA and the Tennessee Heritage Program jointly sponsored the development of *Tennessee's Rare Wildlife*. The first volume of this species' status report, "The Vertebrates," was published in 1980. The second volume, "The Invertebrates" will be printed in the near future.

TWRA sponsored a project launched at the Tennessee Technological University which seeks methods to determine the age and annual reproductive success of bobcats (*Lynx rufus*). These methods have been sought for evaluation of bobcat population trends due to

KEY WILDLIFE HABITAT



**THIS HABITAT SUPPORTS
UNIQUE WILDLIFE SPECIES**

GRAY BAT

INDIANA BAT

PLEASE DO NOT DISTURB

**STATE/FEDERAL
LAWS APPLY**

**THIS IS A TWRA - LANDOWNER
COOPERATIVE PROJECT**

Copies of this sign are posted near active bat caves in order to help minimize human disturbance.



Shaking hands to seal a cooperative agreement to conserve the endangered barren's topminnow are Bob Hatcher, TWRA Endangered Species Coordinator, and Mr. Joseph Banks, owner of the manmade pond in the background which supports about 90 percent of the fish. Others pictured are (from left to right) Ms. Day Lohmann, Tennessee Nature Conservancy; Jeff Prestwich, TWRA Area Endangered Species Coordinator; and Mrs. Bertha Banks.

the requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). After completion of this project in 1982, it is hoped that such methods will be useful for determining baseline bobcat population trend data for future management of this species. Harvest of bobcat is monitored by the State through a bobcat tagging program and required reporting by fur dealers.

Since about 1950, the streams where

the Ohio River muskellunge (*Esox masquinongy ohioensis*) lives have been severely polluted from surface and underground coal mines. TWRA is hatching and restocking the muskellunge in streams that have recovered sufficiently from pollution. Suitable water quality, however, is seriously threatened by increasing coal demands.

Tennessee has very diverse habitats which host a wide variety of wildlife species. Other endangered wildlife in

Tennessee which are protected by either State or Federal laws include: the snail darter (*Percina tanasi*), lake sturgeon (*Acipenser fulvescens*), eastern cougar (*Felix concolor cougar*), river otter (*Lutra canadensis*), peregrine falcon (*Falco peregrinus*), painted snake coiled forest snail (*Anguispira picta*), and 16 endangered mussels. Tennessee lists 57 endangered and threatened wildlife species, of these, 28 are also federally listed.

Future Plans

Beginning fiscal year 1983, Federal funds which were formerly available for endangered wildlife conservation under Section 6 of the Endangered Species Act will no longer exist. Despite financial setbacks, however, it is believed that Tennessee's program has enough public support and volunteers to enable continuation of priority programs and for planning of future projects.

During 1982 and 1983, TWRA plans to continue its bald eagle and osprey hacking projects at previous rates, with increased use of qualified volunteers to offset budgetary cuts. Sometime between 1983 and 1985, hacking of peregrine falcons is proposed.

Plant conservation in Tennessee will be featured in a later issue of the BULLETIN. The Tennessee Heritage Program has official authority to conserve plants in the State.

This article was coauthored by Alison Chisholm, an English major at Marymount College of Virginia in Arlington, Virginia.

LEOPARD

Continued from page 3

standard comment period, which ended June 24, 1980, was reopened until December 24, 1980, because of strong public interest. In part because of the controversial nature of the proposed action, and to insure that the final decision would be based on the best available biological data, the Service contracted for another study, "The Leopard *Panthera pardus* and Cheetah *Acinonyx jubatus* in Kenya" (see October 1981 BULLETIN); the comment period was again reopened from September 8, 1981, to October 8, 1981.

Over 1,000 written comments to the proposal were received. Of these, more than 90 percent opposed both the proposed reclassification and the proposed regulations to allow the importation of trophies under CITES, although most of these communications were personal

opinions and provided no substantive data. Those comments that did contain significant information or matters of special concern were addressed by the Service in the final rulemaking. Upon a re-examination of the original status reports, the 1981 leopard study, the public comments, and information from many of the affected African nations, the Service modified the action as originally proposed. The populations to be reclassified as Threatened were changed from those of all sub-Saharan Africa to only those of southern Africa. No country objecting to the proposal was affected by the final rulemaking.

Effects of the Rulemaking

Although leopard populations in southern Africa have been reclassified as Threatened, they will still receive protection under the Endangered Species Act of 1973, and all leopards will be retained on Appendix I of CITES. No commercial trade in leopard products is

authorized, and importation of these products into the United States will continue to be strictly prohibited.

Legally taken sport-hunted trophies of Threatened leopards may be imported into the United States provided the importer has obtained a permit from the U.S. Management Authority under the terms and conditions of CITES. In addition, permits for Threatened species may be issued for scientific purposes to enhance the survival or propagation of the species, for educational purposes, or for other reasons consistent with the purposes of the Act.

Since the leopard is killed indiscriminately in parts of Africa because of predation on livestock, the Service believes that limited sport hunting would benefit the species as a whole by creating an economic incentive for its conservation. Hunting license and guide fees are expected to give the affected countries the means to manage the leopard as another natural resource.

REGIONAL BRIEFS

Continued from page 2

mussel (*Conradilla caelata*). TVA plans to complete its analysis of the data and present the results to the committee by June or July of this year.

Region 5—The Virginia Round-leaf Birch Recovery Plan has been submitted to the Director for approval. This will be the first recovery plan completed for a listed tree, and one of the first for any plant.

Regional endangered species personnel are reviewing a proposal from the State of Massachusetts to use ospreys as "foster parents" for bald eagle chicks on Martha's Vineyard Island.

Region 6—Representatives from the Service, Bureau of Land Management, Utah Division of Wildlife Resources, and the University of California met in Salt Lake City recently to discuss development of the Beaver Dam Slope Desert Tortoise Recovery Plan.

Last December, about 7,300 humpback chub (*Gila cypha*) were taken from the Willow Beach National Fish Hatchery in Arizona via helicopter into Cataract Canyon, Utah, and released in the Colorado River to supplement existing populations. The fish averaged about 3 inches in length, and had been marked with coded wire nose tags. The area will be monitored in future years, and all captured humpback chubs will be screened with a field sampling detector to check for the presence of the magnetized tag.

The October 1981 BULLETIN reported on a Memorandum Opinion and Order issued by the United States District Court for Colorado regarding a lawsuit brought by the Colorado River Water Conservation District and other plaintiffs against the Department of Interior and the State of Colorado. The court ordered that summary judgement be entered for the plaintiff river districts, declaring that the designations and listings of the Colorado River squawfish (*Ptychocheilus lucius*) and humpback chub as Endangered species are invalid and void. Since then, the court has withdrawn the Memorandum Opinion and Order, and vacated the judgement. The court found that the fish were properly classified as Endangered.

Unfortunately, this does not end the case. Summary judgement has not been made on the plaintiffs' claim that the Federal defendants' impoundment projects are in violation of the Endangered Species Act; thus, they request the court "to order the Defendants to open the gates on every dam on the Colorado River System and substantially return the river to its natural condition." Summary judgement also has not been made on the plaintiffs' claims that

(1) competition and predation by exotic, or non-native, fishes have caused the decline of the chub and squawfish, (2) non-native parasites and diseases have been introduced as a side effect of stocking these fishes, and (3) continued stocking and limitations on catching non-native fishes demonstrate a preference for these fishes which, if allowed to continue, will eradicate the chub and squawfish populations.

Region 7—A status report has been completed on the Endangered short-tailed albatross (*Diomedea albatrus*). Once common in Alaskan waters, this species is now the rarest of all albatrosses. *D. albatrus* is making a slow recovery, now numbering 250 birds on Torishima and Minami Kojima, Japan. A limited number of copies of the 36-page status report are available upon request from the Alaska Regional Office.

During the 1982 field season, the Alaska office will continue the peregrine falcon survey and banding efforts on five rivers in the interior and North Slope regions of Alaska. Additionally, it will be surveying the northwest coastal region of the State in anticipation of oil and gas exploration in this area. As in 1981 Alaska office researchers will trap

adult peregrines from interior populations to obtain blood samples for pesticide analysis. In 1982, blood from adults from the North Slope regions will also be sampled. Preliminary results from the analysis of samples collected in 1981 indicate higher pesticide residues in Alaska birds than of those recorded from peregrines on Padre Island, Texas (also collected in 1981). In cooperation with the Migratory Bird Program, migration studies on peregrine falcons and other raptors will begin in southeastern Alaska this year.

Field activities planned for the Aleutian Canada goose (*Branta canadensis leucopareia*) recovery effort in 1982 include a spring survey of release islands (Agattu, Amchitka, and Alaid/Nizki), an estimate of the Buldir Island nesting population, the release on Agattu Island of propagated birds from the Northern Prairie Wildlife Research Center, and the trapping and transplanting of birds from Buldir to Agattu Island.

According to Brian Johns of the Canadian Wildlife Service, no Eskimo curlews (*Numenius borealis*) were seen this past summer during a brief survey of the Anderson River region in the Northwest Territories.

Hawksbill Nesting in Florida

On October 22, 1981, a female sea turtle deposited a clutch of 170 eggs on Soldier Key, Florida (next to Key Biscayne National Monument). Between January 20-26, 1982, the young emerged and were found to be hawksbills (*Eretmochelys imbricata*). This is one of the first verified hawksbill nestings in the United States, and the first where voucher specimens have been acquired.

The nesting was unusual in several other respects. Until this time, the latest sea turtle nesting record in the U.S. during any season was that of a green turtle (*Chelonia mydas*) on September 6, 1981; the hawksbill nesting is the first sea turtle nesting known to occur in

colder months in Florida.

After the October 22 nesting was reported, Dr. George Dalrymple of Florida International University (FIU) moved approximately half the eggs to an incubation chamber. A total of about 50 eggs hatched, including those remaining in the Soldier Key nest. Environmental stress from low temperatures and the long incubation time (over 90 days at both locations) are thought to have contributed to developmental abnormalities that have plagued the clutch. Most of the hatchlings died within a few days, and only a few remained alive as of February 5 at FIU and the Miami Seaquarium. Unfortunately, none are expected to survive.

PUPFISH

Continued from page 1

Game concurred with the available evidence, but proposed to continue surveying potential habitats until 1979, after which removal from the list was recommended if no other populations were discovered.

Additionally, the Service received comments on the proposal from seven concerned citizens, all of whom considered delisting inadvisable. Six respondents had observed pupfishes, five of them in the vicinity of Tecopa, which they logically assumed were Tecopa pupfish. However, biologists generally

concur that all specimens examined in the area since 1970 represent an unlisted subspecies (*C. nevadensis amargosae*), which is widespread and locally common in parts of the Amargosa River system and in other springs in and near Tecopa. The Tecopa pupfish had considerably larger scales plus several proportional and other differences which distinguished it from the Amargosa River pupfish subspecies.

Continuing concern and conservation efforts for *C. nevadensis amargosae* are justified, because its range and habitat are also limited. This surviving sub-

Continued on page 8

BOBCAT

Continued from page 3

the CITES criteria for listing species and delisting them from the appendices. Copies of the full text of the Service's proposal which will be sent to the CITES Secretariat are available from the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Postal Procedure

The Service will send the bobcat delisting proposal to the CITES Secretariat for consideration through the mail procedure. Upon receiving the proposal, the Secretariat will circulate it to all Parties. Parties have 60 days to submit to the Secretariat comments and data on the proposal. These data and comments are then combined and communicated to all the Parties by the Secretariat. If no objection is received by the Secretariat within 30 days of the date replies and recommendations were sent to the Parties, the amendment (the proposal in question) will enter into force in 90 days, except for those Parties which take reservations. If an objection by any Party is received by the Secretariat, the proposed amendment will be submitted to a postal vote after the Secretariat has notified all the Parties that an objection has been received.

Unless the Secretariat receives the votes for, against, or in abstention from at least one-half of the Parties within 60 days of the date of notification, the proposed amendment will be referred to the next biennial meeting of the Conference for further consideration. If votes are received from one-half of the Parties, the amendment must be adopted by a two-thirds majority of Parties casting votes. The Secretariat notifies all Parties of the result of the vote.

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	192	43	445	45	7	24	756

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the leopard, gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 11 animals
9 plants

Number of Critical Habitats Listed: 50
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 46
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

January 31, 1982

PUPFISH

Continued from page 7

species and its habitat needs have been considered locally in planning and development of the region, at least partially, because of the listing of its less fortunate relative. It is not presently in danger of extinction.

The Director of the California Department of Fish and Game summarized the status findings of his agency, stating that Tecopa pupfish were either extinct or at such low population densities that sampling methods were unproductive. He indicated that a lookout for possible survivors would continue whether or not the species was delisted.

New Publication

The Proceedings of the first annual meeting of the Gopher Tortoise Council entitled "The dilemma of the gopher tortoise—Is there a solution?" is now available. It can be ordered from Richard Franz, Florida State Museum, University of Florida, Gainesville, Florida, 32611 for \$5.00.

Materials featured in the "New Publications" column are presented for information purposes only. The mention of non-Federal government publications does not imply concurrence with their contents or with the philosophies of the various publishers.

February 1982

Vol. VII No. 2

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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Int 423

ENDANGERED SPECIES

Technical Bulletin

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House Subcommittee Hears Testimony on the Act

Oversight hearings on the Endangered Species Act of 1973 were held by the U.S. House of Representatives on February 22 and March 8, 1982. These sessions, along with an earlier round of hearings conducted on December 8 and 10, 1981, by the U.S. Senate, are preliminary to reauthorization of the Act by Congress.

Congressman John Breau (D-LA), chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries, presided over both days of House hearings. Breau opened the hearings by stating, "I think most of us agree that the goals of the Act are noble. Most of us also agree that there have been problems for various reasons with its implementation. Let us resolve to listen to each other to work together in a spirit of compromise, to develop legislation that will result in a strong, effective, and rational program to protect endangered species." Testimony was received by the Subcommittee from three Federal agencies and from over 2 dozen other witnesses representing State governments, private industry, conservation groups, and academia.

The witnesses were organized into panels addressing various issues. Summary testimony of the Fish and Wildlife Service (Interior), National Marine Fisheries Service (Commerce), and the State Department was not heard until the end of the second day, allowing these witnesses to respond to all preceding testimony.

Eugene Hester, Deputy Director of the Service, testified that a recent agency review of the Act had revealed "several problem areas which need to be addressed." He stated that the Service, however, was "uncertain how to translate the identification of these problems into specific legislation" and suggested that, perhaps, policy or regulatory changes could solve many of the problems. The Service recommended that the Section 7 "exemption process" be

streamlined and that an "experimental population" category be established under the Act. The Service requested a 1-year reauthorization during which it will attempt to "correct identified problems through existing regulatory and administrative mechanisms before opening up the Act to further major legislative modification." Other Service witnesses were Ronald E. Lambertson, Associate Director and Endangered Species Program Manager; John L. Spinks, Chief, Office of Endangered Species; and Richard Jachowski, Chief, Office of the Scientific Authority.

William H. Stevenson, Deputy Administrator for Fisheries, National Marine Fisheries Service, summarized Commerce's activities conducted under the Act. He testified that the Act "has worked well with respect to the marine species" and recommended a 2-year reauthorization without amendments. Richard B. Roe, Acting Director, Office

of Marine Mammals and Endangered Species, also testified for Commerce.

The testimony of David A. Colson, Assistant Legal Advisor for Oceans, International Environmental and Scientific Affairs, U.S. Department of State, focused on international wildlife conservation, and in particular, on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which is implemented by the Act. Colson stated, "The Department of State is firmly committed to the reauthorization of the Act as a means of carrying out our international obligations and furthering our interests. We should be concerned about amendments to the Act which would call into question our ability to carry out our obligations or which would detract from the leadership role we exercise."

Prior to the State Department's testimony, a proposal had been made that the Act be amended to require that the United States *automatically* take a reservation if, under CITES, a domestic species is added to the CITES appendices notwithstanding U.S. opposition. Colson commented on this amendment,

Continued on page 5

Condor Pair Accidentally Destroys Its Own Egg

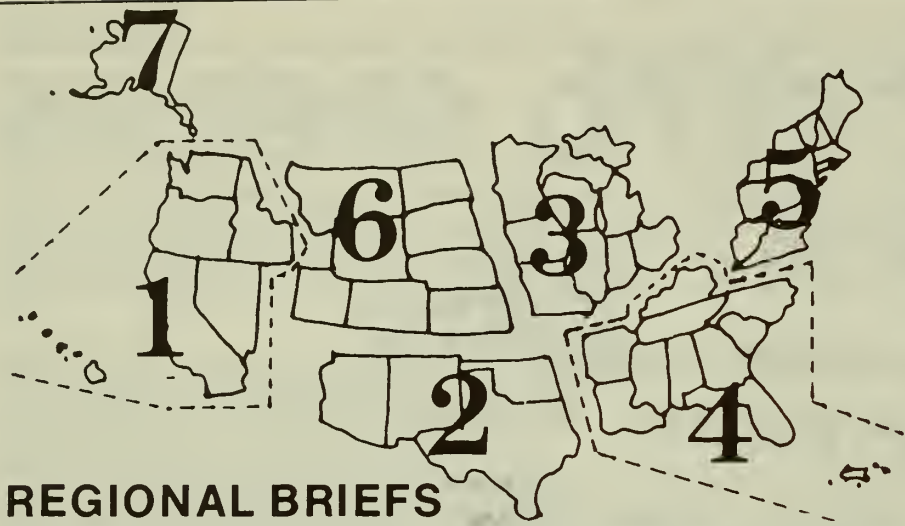
Efforts to conserve the critically endangered California condor (*Gymnogyps californianus*) were dealt a setback February 26 when the first egg known to have been laid this season was accidentally destroyed by the breeding pair.

On February 14, a biologist with the Condor Research Center was the first person ever to witness the laying of a California condor egg. The egg was dropped from the standing position, falling about one foot into a sand substrate without suffering any apparent damage, and the female began incubation within minutes. The biologist observed the event through a telescope from one-third of a mile away in the mountains northwest of Los Angeles.

Both birds took turns incubating the egg until February 24, when the male

condor refused to relinquish it to the female. After 2 days of disputing, the female managed to work the egg out from under her mate. Unfortunately, the egg rolled out of the nest cave and, despite efforts by both condors to work it back inside, it rolled over the cliff. Most of its remains were quickly consumed by ravens and the female condor, although a few fragments were recovered for study.

The condor pair has mated again since the incident and, because the loss occurred so early in the breeding season, there is a reasonably good chance that the birds might produce a second egg. They are believed to be the same pair that successfully fledged a chick 2 years ago after other disputes at that time.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of February:

Region 1—Efforts to eradicate all feral sheep and goats from Mauna Kea Forest Reserve on the Island of Hawaii are progressing successfully. The proj-

ect was mandated by a Federal Court order, and is intended to protect the Endangered palila (*Psittirostra bailleui*) and its mamane-naio forest ecosystem. Between July 1980 and May 1981, the first phase of the project involved public hunting, which harvested 1074 feral sheep and 95 feral goats. The second

phase, involving Hawaii Department of Forestry and Wildlife staff, resulted in the taking of 494 feral sheep and 64 feral goats by October 1981. At that time, it was estimated that fewer than 30 sheep and 6 goats remained. Since then, a bimonthly program of 1-week long efforts using Hawaii personnel and helicopters has been continuing in the effort to eradicate the few remaining feral goats and sheep.

The Laysan Duck Recovery Plan has been submitted to the Director for approval.

Representatives of interested Federal and State agencies and the botanical community at large met recently in California for the annual review of the approximately 800 California plant taxa published in the December 15, 1980, Notice of Review.

Region 2—The Dexter National Fish Hatchery has produced about 1.8 million razorback sucker (*Xyranchea texanus*) eggs, with approximately 500,000 larvae hatched as of March 1, 1982.

Some progress is being made toward acquisition of the San Bernardino Ranch (Arizona) in fiscal year 1982 after meetings with The Nature Conservancy and the Cochise County Recreation Commission. The ranch contains habitat for several listed fishes.

As of February 26, 1982, there were eight active bald eagle (*Haliaeetus leucocephalus*) territories in the Salt and Verde River systems (Arizona), with young hatched at three sites. One nest, however, was about to be flooded by the rising Horseshoe Reservoir. The adults at that nest are incubating the eggs, and several contingency plans are being considered.

The Texas Parks and Wildlife Department is assisting Region 2 by trapping and shipping Texas bobwhites (*Colinus virginianus texanus*) to be used as "foster parents" for introductions of masked bobwhite (*C.v. ridgwayi*) chicks from the Patuxent Wildlife Research Center into Mexico. This project is part of the U.S./Mexican Cooperative Agreement for Wildlife Conservation.

Region 4—The Georgia Department of Natural Resources has located two more eagle nests in Georgia. Unlike the nest found last year, which was the first nest reported in Georgia in several years, these nests are not located on the coast.

The Eastern Indigo Snake Recovery Plan has been submitted to the Director for approval. Draft recovery plans for the Tennessee purple coneflower (*Echinacea tennesseensis*), Alabama cavefish (*Speoplatyrhinus poulsoni*), and the painted snake coiled forest snail (*Anguispira picta*) have been submitted for technical review. Agency reviews are being conducted on recovery plan drafts for the Puerto Rican

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. Region 2: Arizona, New Mexico, Oklahoma, and Texas. Region 3: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Region 4: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. Region 5: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Region 6: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Region 7: Alaska.

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parrot (*Amazona vittata*), red wolf (*Canis rufus*), and Eastern cougar (*Felis concolor cougar*).

The Range-wide Red-cockaded Woodpecker Survey is continuing with input from military installations and national wildlife refuges in the region.

The Green Pitcher Plant Recovery Team was appointed on January 6, 1982, and a draft recovery plan, completed under contract, was transmitted to the recovery team on February 12, 1982.

Since early February, there has been a continuing die-off of manatees (*Trichechus manatus*) in Lee County, Florida. As of March 4, the toll was 21 known dead. One was probably injured in a boat collision, but the others exhibited no signs of trauma and their cause of death has not yet been determined, although cold water temperatures have been ruled out. The manatee salvage and necropsy team, operating out of the National Fish and Wildlife Laboratory (NWFL) in Gainesville, Florida, has taken tissue samples, which are being analyzed at NWFL and various other labs.

Region 5—Pete McLain, Deputy Director of the New Jersey Fish, Game, and Wildlife Department, has prepared a plan for bald eagle management in New Jersey. The one remaining bald eagle pair in the State has a long history of nesting failure, but officials are hopeful that they will accept a captive-produced hatchling this spring from the Patuxent Wildlife Research Center.

A bald eagle found incapacitated along the lower Connecticut River January 31 was rehabilitated by raptor experts Jan and Stuart Mitchell and released 2 weeks later. The nature of the bird's problem was not known, but it had a body temperature lower than normal, and the Mitchells provided food and antibiotics. The event received coverage in the local Connecticut press.

The Delmarva Fox Squirrel Recovery Team met in Annapolis February 19 to discuss recovery progress, funding, and updating of the recovery plan. Additional squirrel transplants in Maryland and Virginia are scheduled for this spring.

Region 6—A management plan is being prepared for whooping cranes (*Grus americana*) on the Platte River in Nebraska. The plan will be based largely on the results of recent studies completed by the Service, U.S. Geological Survey, and Bureau of Reclamation. Phase I of the plan will concentrate on a review of the Platte River Studies and the flow aspects of the plan, including the amount of flow needed to scour the habitat, the amount needed when cranes are present, and the amount needed to protect the wet meadow complex. Phase II of the plan, to be completed when funds become available,

Culebrita Island Remains Part of Refuge System

On February 1, 1982, Secretary of the Department of the Interior, James G. Watt signed a notice advising the public of his decision on the proposed disposition and administration of lands declared excess by the U.S. Navy on the islands of Culebra and Culebrita, Puerto Rico. The Department has decided to deed 936 acres in Culebra Island to the Commonwealth of Puerto Rico and to transfer 776 acres to the Service. The decision also retains approximately 262 acres on Culebrita Island in the Service's National Wildlife Refuge System.

Six species protected under the En-

dangered Species Act of 1973 are affected by this disposition which implements the alternative combining social, economic, and wildlife benefits developed in the Final Environmental Impact Statement. Cooperative management agreements between the Commonwealth and the Service relating to conservation and development of the natural and cultural resources on the land involved have been developed and will be carried out. The formal land exchanges are planned for early 1982. (For more information on this story see the November 1981 BULLETIN).

will cover other alternatives and recommendations for protecting the habitat, such as mechanical and chemical methods for clearing woody vegetation.

A Memorandum of Understanding (MOU) was signed with Francis E. Warren Air Force Base in Cheyenne, Wyoming, for the management and protection of a rare plant species, the Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*). One of three known populations exists on the base. This is the first of several MOU's that Region 6 is pursuing for plants.

Twenty Aleutian Canada geese (*Branta canadensis leucopareia*) were killed by a mink (*Mustela vison*) at the Northern Prairie Wildlife Research Center during a blizzard the night of February 23. Over 50 mallards (*Anas platyrhynchos*) were also found dead. The winter bird pens have been relatively secure in the past, and it is thought that the deep snow drifts may have allowed the animal to cross the perimeter fences into the pen complex. Although the mink at first eluded a number of live traps which were set in and around the pens, it was found captured the following morning.

A dead black-footed ferret (*Mustela nigripes*) was found near the ranch southwest of Meeteetse, Wyoming, where dogs killed a ferret last September (see the October 1981 BULLETIN). The ferret was found by Dr. Tim Clark, who has been working in the area to obtain information on the winter activities of black-footed ferrets and to locate additional prairie dog towns with ferrets present. A necropsy did not reveal the cause of death, but additional tests are being conducted. It has been determined that the ferret definitely was not the individual radio-collared and tracked in November 1981 (see the December 1981 BULLETIN).

A third dead ferret, this time a road kill, was found March 3 about ¼ mile north of Meeteetse, and approximately

15 miles northeast of the main study area. This latest discovery has raised biologists' hopes of finding a new population of ferrets.

Region 7—Work is continuing on revising both the approved Aleutian Canada Goose Recovery Plan and the agency review draft of the Alaska Peregrine Falcon Recovery Plan.

Back Issues of Bulletin Available

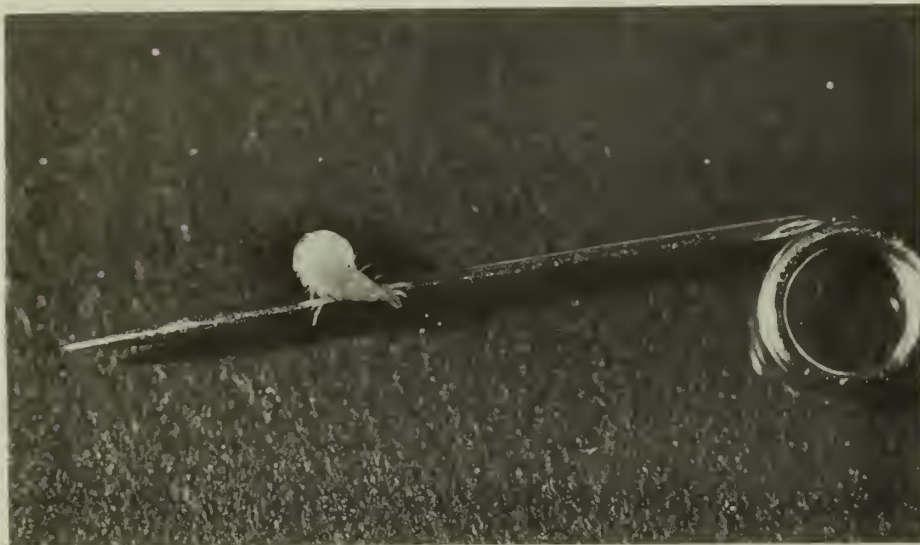
Back issues of the *Endangered Species Technical Bulletin* are available from the Fish and Wildlife Reference Service in Denver, Colorado. This service is an agency of the Denver Public Library and is funded by the U.S. Fish and Wildlife Service, Division of Federal Aid. Available "hard copy" issues will be sent free of charge upon request for as long as the supply lasts. A set of back issues (July 1976 November/December 1980) is available on microfiche for \$2.00. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy to Fish and Wildlife Reference Service, Unit 1, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

Hay's Spring Amphipod Listed as Endangered



This tiny aquatic crustacean, the Hay's spring amphipod (*Stygobromus hayi*), was recently added to the U.S. List of Endangered and Threatened Wildlife and Plants.

Photo by C. Kenneth Dodd

Hay's spring amphipod (*Stygobromus hayi*), an aquatic crustacean occurring in a single spring within the National Zoological Park in Washington, D.C., was listed by the Service as an

Endangered species (F.R. 2/5/82). Critical Habitat has not been determined for the amphipod because of possible collection threat or malicious acts.

Extensive surveys of the Rock Creek

Drainage by Dr. John Holsinger of Old Dominion University have determined that Hay's spring amphipod is found only at one small spring which emerges from the rocky western wall of the Rock Creek Valley and flows about 35 meters into Rock Creek. No more than 10 individuals of the species have been seen at the site at any one time.

The continued existence of this species is threatened by vandalism and by overcollecting for scientific purposes. Additionally, since the entire habitat covers an area of only about 5 square feet, it could be threatened by the possibility of its existence being overlooked during future park planning.

Implementation of the protections provided by the Endangered Species Act of 1973 for the amphipod will have no effect on development since those protections are consistent with the current management and maintenance of both Rock Creek Park and the National Zoological Park. No plans or projects are known or anticipated which will be affected by this rule. The listing, however, will draw attention to the species' existence and add further justification for its protection during future planning at the National Zoological Park.

The species was first proposed (under the scientific name *Stygonectes hayi*) as Endangered on January 12, 1977. As a result of the Endangered Species Act Amendments of 1978, that proposal was withdrawn by the Service. The species was repropoed on July 25, 1980.

Wood Stork Population Declines in States

Through a notice of status review (F.R. 2/16/82) the Service is seeking additional biological data on the U.S. population of the wood stork (*Mycteria americana*) to determine whether this species should be protected under the Endangered Species Act. The review was prompted by data indicating population decline and adverse habitat modification.

The Service is also seeking information regarding environmental and economic impacts which might be effected by a possible listing of the stork or by a determination of Critical Habitat for the species (i.e. effects on Federal funding, grants, or permits). Information responsive to the notice should be submitted on or before April 19, 1982, to the Area Manager, U.S. Fish and Wildlife Service, Department of the Interior, 15 North

Laura Street, Jacksonville, Florida 32202.

Biology and Status

Wood storks, the only true stork native to the U.S., are large, long-legged wading birds which frequent freshwater and brackish wetlands and nest in cypress and mangrove swamps. They feed in freshwater marshes and similar habitats.

Formerly, wood storks nested in the coastal southern States from South Carolina to Texas. Today, nesting in the U.S. is confined to Florida and southeastern Georgia. The U.S. breeding population has declined from approximately 75,000 in the early 1930's to only 10,000 in 1979. The most consistent nest failures have occurred since 1960, with the overall number of storks

breeding in the U.S. declining 41 percent between 1960 and 1975.

Two major factors involved in the decline of the wood stork in the U.S. are (1) the reduction in the number of available nesting sites and (2) the loss of an adequate food base during the nesting season. Both factors are due primarily to drainage and altered hydroperiods caused by manipulation of wetlands, particularly in south Florida. Major wood stork rookery and feeding areas are located on a map published within the notice of status review.

The present U.S. breeding population is now disjunct from the population which nests from Mexico through Central and South America to northern Argentina. The Mexican and Central American breeders, which disperse into the southern U.S. after breeding, are not subjects of this review.

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Service Announces Preliminary Proposals to Amend CITES Appendices

The Service has announced the preliminary results of its review of North American animals included on Appendices I and II of CITES (F.R. 2/17/82). Public comment on the review is invited, and all statements received by August 31, 1982, will be considered in determining whether the Service should submit proposals to the CITES Secretariat for circulation to the Parties.

Background

At last year's CITES conference at New Delhi, India, the Parties resolved to conduct a 10-year review of the appendices, and a notice initiating Service participation in this process was published in June 30, 1981 (see the July 1981 BULLETIN). The review is being conducted in coordination with the Canadian Wildlife Service and the Dirección General de la Fauna Silvestre of Mexico. Both biological and trade information on CITES species native to North America (and islands under U.S. jurisdiction) was solicited. Comments were received from a number of State wildlife agencies, zoos, and interest groups.

Potential Proposals

Among the potential proposals is a change in status under CITES for the following species, or some of their populations: bighorn sheep (*Ovis canadensis*), gray wolf (*Canis lupus*), lynx (*Lynx canadensis*), pronghorn antelope (*Antilocapra americana*), swift fox (*Vulpes velox*), Tule white-fronted goose (*Anser albifrons gambelli*), and the Mona Island boa (*Epicrates monensis monensis*). The Service is considering a proposal to retain the river otter (*Lutra canadensis*) on Appendix

II to help control trade in other otter species similar in appearance. Also under consideration are proposals to remove the blue pike (*Stizostedion vitreum glaucum*) and longjaw cisco (*Coregonus alpenae*) from Appendix I because these fishes are likely to have been extirpated.

The Service has decided not to propose changes in CITES listings of other North American animals at this time. Results of the review on plants will be announced in a separate notice. The Service plans to publish a further *Federal Register* notice in September 1982 announcing its decisions on the potential proposals prior to submitting them to the CITES Secretariat for consideration at the next CITES conference, which is expected to occur around April 1983.

Request for Data on Additions to CITES Appendices

The Service has published a notice (F.R. 2/16/82) requesting information from the public on species that might be considered for inclusion on Appendix I or II of CITES. All data received by May 31, 1982, will be considered in identifying organisms that should be proposed for CITES listing at the next conference of the parties, which will occur around April 1983.

The scope of this examination is worldwide, and includes both plants and animals. In its notice, the Service included a preliminary list of some plants that are considered candidates for listing under the Endangered Species Act, and which are of special interest for CITES protection because of actual or

Continued from page 1

saying it is "inappropriate and does not further our interests from a practical perspective." He said that the State Department was not opposed to reservations *per se*, but noted constitutional issues, the need for flexibility in conduct of foreign relations, and that "the legal structure of CITES is such that the taking of a reservation . . . is little more than a political objection, at least as concerns parties to the Convention." Colson also expressed concern that, such a precedent having been set by the U.S., broad scale taking of reservations could soon become the "death knell" of CITES' effectiveness.

A proposed amendment to the Act providing for a determination of "no detriment" under CITES had also been recommended to the Subcommittee. Colson commented on this saying, "While we would fully support greater State involvement in such determinations, we believe that to conform with CITES, any formulation concerning "no detriment" should be sufficiently flexible, providing for the consideration of possibly different criteria in specific cases, and subject to final determination by the national scientific authority established by Section 8(a) of the Act pursuant to the Act."

The third proposal of concern to the State Department is that the Act be amended to delete the requirement for listing foreign species, Endangered or Threatened, under the Act, leaving their listing solely to CITES. Colson clarified that the Act provides much broader protection than CITES and that "if listing of foreign species is terminated under the Act, Section 8 programs providing for fi-

Continued on page 11

potential international trade.

After analysis of the information received in response to the February 16 notice, the Service plans to publish another notice in July 1982 announcing those species selected as candidates for U.S. CITES proposals. After further comment and review, the Service will publish in October 1982 a notice of the U.S. proposals that will be forwarded to the CITES Secretariat.

Copies of the February 16 notice, the current CITES appendices, and the criteria for making changes in the appendices are available from the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (202/653-5948).

Virginia's Endangered Mussels Studied by State's Co-op Fishery Research Unit

Second in a series on Endangered species projects being conducted by the Service's Cooperative Research Units program.

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Scientists have known since the last century that the rivers of eastern North America contain the richest and most diverse freshwater mussel fauna in the world. Unfortunately, this important resource has declined to the point where 23 species of mussels are now classified as Endangered.

Since relatively little is known about the biology, ecology, and habitat requirements of these organisms, research is essential for their conservation and recovery. The Service's Virginia Cooperative Fishery Research Unit, along with the Biology Department of the Virginia Polytechnic Institute and State University (VPI & SU), was contracted by the Virginia Commission of Game and Inland Fisheries (VCGIF) and the Service's Endangered Species Program for studies on the State's nine Endangered mussel species. Although the work is concentrating on listed species in southwestern Virginia waters, it is expected to have applications to other mussels of the Tennessee River Basin.

The Cumberland Plateau region, which includes portions of seven States along the southern Appalachian Mountains, is a major center of molluscan

speciation. In addition to many endemic mussels, its waters contain fauna typical of the Ohio and Mississippi River Basins. Approximately 65 mussel species occur in Virginia, an indication of the area's diversity. Within the upper Tennessee River drainage, particularly sections of the Clinch and Powell Rivers, the North, Middle, and South Forks of the Holston River, and their numerous tributaries, are found the State's remaining populations of nine Endangered mussels: the fine-rayed pigtoe (*Fusconaia cuneolus*), shiny pigtoe (*F. edgariana*), rough pigtoe (*Pleurobema plenum*), Cumberland monkeyface (*Quadrula intermedia*), Appalachian monkeyface (*Q. sparsa*), birdwing (*Conradilla caelata*), dromedary (*Dromus dromas*), green-blossom (*Dysnomia [Epioblasma] torulosa gubernaculum*), and tan riffle shell (*D. [=E] walkeri*). (Two of these, *P. plenum* and *D. t. gubernaculum*, were reported historically from Virginia, but are now thought to be extirpated from the State.)

Virginia Co-op Fishery Research Unit Study

The lead responsibility for protection and management of the State's Endangered mollusks is with the VCGIF, which contracted with the Virginia Cooperative Fishery Research Unit and VPI & SU to obtain the necessary basic

biological and ecological data. Among the chief study objectives were to 1) compile a literature digest, determine the species' ranges, and develop relative distribution maps; 2) describe the general habitat characteristics for each listed mussel; and 3) summarize the data. Co-op unit leader Dr. Garland B. Pardue, assistant leader Dr. Richard J. Neves, and biologists Dr. Ernest F. Benfield and Sally D. Dennis submitted the final report, aided in their investigations by Alexander V. Zale, Lynn Russell Weaver, and Jane Barden.

The projects included under the first objective were originally contracted to the Tennessee Valley Authority (TVA), and that agency's 1978 report provided a literature review, along with historical and recent collection records; however, since no fieldwork had been conducted to update the previous records, it was necessary to verify the Endangered mussel sites. A team of four biologists was sent out during periods of low stream flow (summer-autumn) to sample both historical sites and other areas showing evidence of suitable habitat. Where practical, the search was carried out by snorkeling and wading; waterscopes were used in all riffle areas. Stream banks were examined for freshly dead shells, and representative shells of the various species found during the surveys were retained for the VPI & SU collection. All live specimens, however, were returned to the water. Wherever several individuals of a listed species were discovered, the biologists conducted quantitative sampling. All specimens in each sample quadrat were identified, counted, measured for shell length, and placed back into the same area.

Host Fish Surveys

Following internal fertilization of eggs, mussel embryos develop to the glochidial phase within the gills of adult female mussels. These immature mussels are released into the stream where, in most species, they must attach to the gills or fins of certain fishes. During this parasitic phase, the glochidia derive nutrients from the host fish and metamorphose further, developing the anatomy necessary to survive later as adults. Because of their particular requirements, most mussels exhibit degrees of specificity in their host selection; only certain fishes can benefit each mussel species. Conservation of the appropriate host fishes therefore is very important in any recovery effort for listed mussels.

As part of the Virginia Co-op Fishery Unit study, researchers visited all important Endangered mussel sites where there were no past fish collection records in order to determine species composition. A gas-powered, backpack electroshocking device was used to stun the fish and, after an initial exami-



Searching for endangered mussels with a plexiglass-bottom waterscope and mussel scoop.

nation at the site to determine that no protected fishes were taken, the specimens were preserved in formalin for identification and further analysis in the laboratory.

Although more research is necessary on the requirements of Virginia's Endangered mussels, life history studies conducted by Zale and Weaver on several Cumberlandian mollusks have confirmed that nongame fishes are important hosts. This point has implications for certain traditional fishery management practices, such as the stocking of streams with game species, which could change fish community compositions. Among the Virginia co-op unit's recommendations is that fisheries management operations in Endangered mussel habitat be carefully reviewed.

Other habitat characteristics take on greater importance after the glochidia drop off the host fish to begin the free-living phase of their life cycle. Literature and site surveys were conducted on the substrate, water quality, and hydrology of the waters within southwestern Virginia.

TVA has recently completed similar studies in the upper Tennessee River drainage to evaluate the status of Cumberlandian mussels throughout their range.

Management Recommendations

Of the seven Endangered mussels still remaining in Virginia, five have declined to such a low level that habitat conservation appears to be their only chance for long-term survival within the State. Habitat for *Quadrula intermedia*, *Q. sparsa*, and *Dromus dromas* is in the Powell River between river miles (PRM) 115.8 and 130.6; *Conradilla caelata* occurs within the same stretch, as well as in the Clinch River between (at minimum) CRM 206.9 and 219.2; and *Dysnomia walkeri* is found only in the Middle Fork of the Holston River between MFHRM 18.4 and 29.1. Taken together, these 37 miles constitute virtually all known habitat for the five mussel species in Virginia. Until more is known about the particular needs of individual species, conservation of habitat for all species present at any given Endangered mussel site (both listed and non-listed species) is considered the best approach. Among the study team's recommendations is that Virginia consider designating areas of special concern as mussel sanctuaries, similar to those already established in Tennessee to protect that State's Endangered mussels.

Because of their greater numbers and distribution, *Fusconaia cuneolus* and *F. edgariana*, the two other listed species still found in Virginia, are considered in less immediate danger. The Virginia Co-op Unit's studies of host fish identification and distribution, substrate, and



Typical habitat for the shiny pigtoe mussel in the North Fork Holston River. [Inset of the shiny pigtoe (*Fusconaia edgariana*).]

Photos by Virginia Cooperative Fishery Research Unit

water quality within the upper Tennessee River drainage indicates that suitable habitat for these two species exists outside their current range (although within their historical range). After further research on the mussels' life histories, and with permission from VCGIF, the researchers hope the two species can be reintroduced in some areas, with the goal of improving their status to the point where they will no longer be Threatened or Endangered.

Habitat Conservation

Before recovery and management of Virginia's Endangered mussels can be successful, the continuing problem of habitat degradation needs to be addressed. One of the study team's recommendations was simply the enforcement of existing water quality regulations. The Virginia State Water Control Board was urged to establish additional monitoring stations near Endangered mussel populations so that changes in immediate water quality can be detected. Some streams, such as the North Fork of the Holston River below Saltville, have been contaminated by chloride compounds and mercury. Even isolated spills of toxic substances could have devastating impacts on the sedentary, filter-feeding organisms.

Habitat damage also takes place in more obvious ways. Freshwater mussels generally occur in shallow streams where their specific temperature and oxygen requirements are met, but dam construction has turned some of these waters into deep, cold, stagnant reservoirs. Channelization, along with gravel and sand dredging, can result in the complete destruction of mussel beds. Siltation caused by improper agricultural, mining, and forestry methods has traditionally been a major problem, and today waste material from coal washing operations is also being recognized as having a significant impact on mussel

populations. Fine particles enter the watershed and degrade the water quality, often settling in mussel beds, clogging the mollusks' gills, and making the substrate too unstable for their support.

Recovery Plan

A TVA malacologist under contract to the Fish and Wildlife Service through the Asheville Area Office is writing a comprehensive recovery plan, on a watershed basis, for all listed mussel species occurring in the Clinch, Powell, and Nolichucky Rivers. The data gathered through the Virginia Co-op Fishery Research Unit Study will be an important contribution to development of the plan.

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Although the importance of mussels in freshwater ecosystems is not fully realized by many people, mussels do play a significant role. Like all living things, they are part of a complex, delicately balanced network, and occurrence of a single species can affect many others. For example, both adult and immature mussels are an important food source for a number of mammals, waterfowl, and fishes. They are edible by humans as well, though not often consumed; mussel beds near municipal sewage or industrial outfalls are usually contaminated and consumption could therefore pose a serious threat to health.

Mussels are becoming very valuable as natural monitors of water quality. Because they feed by filtering particles out of the water column, mussels can accumulate pesticides, heavy metals, and other toxic substances in their tissues. The mollusks eventually collect pollutants present in streams even at very low concentrations, giving warning to humans of dangerous contaminants that are often difficult to detect.

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Other selected co-op projects will be featured periodically in future issues of the BULLETIN.

Director Signs Five Plans

Final recovery plans for four species have been approved by the Service's Director: Grizzly Bear Recovery Plan—1/29/82; Maryland Darter Recovery Plan—2/2/82; Southern Sea Otter Recovery Plan—2/3/82; and Socorro Iso-pod Recovery Plan—2/16/82. A comprehensive work plan for the Florida manatee was signed on February 2, 1982.

Grizzly Bear

Historically, the range of the grizzly bear (*Ursus arctos horribilis*) extended from Ontario, Canada, westward to the California coast and from Alaska south to Texas and Mexico. Between 1800 and 1975, grizzly populations in the lower 48 contiguous States declined from estimates of over 100,000 to less than 1,000 bears. The leading causes for the species' decline were livestock depredation control, habitat deterioration, protection of human life, commercial trapping and sport hunting. Logging, mining, ranching, farming, and recreational development continued to add to man-caused mortality and adverse alteration of the grizzly's habitat.

Grizzlies are believed to have disappeared from Texas by 1890, California by 1922, Utah by 1923, Oregon by 1931, New Mexico by 1933 and Arizona

by 1935. Remnant populations remain in mountainous park, forest, and wilderness areas of Idaho, Montana, Washington, and Wyoming. A grizzly bear was killed in early 1979 near the Continental Divide in San Juan National Forest, Colorado. This report casts doubt on whether the grizzly is still extant in Colorado.

The recovery plan identifies six ecosystems where grizzlies have been present during the past decade. These areas presently have adequate space and suitable habitat for the species' continued survival and are the primary focus of the recovery plan. The six areas lie in and around the Yellowstone National Park, the Glacier National Park and Bob Marshall Wilderness Area, Cabinet-Mountains, Selkirk Mountains, the Selway-Bitterroot Wilderness Area, and the North Cascades National Park.

Three of the six areas, where grizzly research is already underway and from which extensive data bases are available, were identified as high priority for implementing recovery tasks. These areas are designated the Yellowstone Grizzly Bear Ecosystem, (YGBE), the Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE—Glacier National Park/Bob Marshall Wilderness Area) and the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE). Implemen-

tation of recovery actions in the remaining ecosystems will be undertaken as additional funds become available.

Highest priority tasks identified in the plan include: (1) decreasing losses to the populations from illegal take and other man-caused mortality. (It is especially important to reduce losses of female bears.); (2) monitoring the population status and trends; (3) developing and/or applying guidelines for multiple use activities on Federal lands to avoid conflicts with grizzlies; and (4) completing and resolving management stratification of Federal lands to reflect the different intensities and importance of grizzly bear use and provide optimum management direction.

Implementation of the recovery plan will be initiated by the Service's Denver Regional Director and carried out through the Denver Regional and Billings Area Office Endangered Species Staffs. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225 (303/234-2209).

Maryland Darter

The Maryland darter (*Etheostoma sellare*), a 3-inch long fish, was discovered in 1912 and described the following year. In spite of attempts to collect the fish at the type locality ("Swan Creek near Havre de Grace, Maryland"—presumed to be Swan Creek near Aberdeen, Maryland), 50 years elapsed before it was reported again. In 1962 and again in 1965, single darters were collected from Gashey's Run (also near Aberdeen). In May 1965, a population of the elusive fish was located in Deer Creek in Harford County, Maryland; recent sightings of the darter, in 1974, 1977, 1978, and 1979 were all from Deer Creek. Researchers have generally concluded that the two individuals taken from Gashey's Run were probably stragglers from the Deer Creek population, which is probably the only permanent population of the species.

On March 11, 1967, the Maryland darter was listed as Endangered and placed under Federal protection. After studying the limited available literature and field records on the species, the Maryland Darter Recovery Team developed a recovery plan for the fish. Unless the actions specified in this plan are implemented in the near future, it is certain that the one known remaining population of this species will be further jeopardized.

The recovery plan outlines further study of the species' requirements and range. It also identifies steps to be taken for the protection, maintenance, and enhancement of the known darter



Remnant grizzly bear populations remain in mountainous park, forest, and wilderness areas of Idaho, Montana, Washington, and Wyoming.

National Park Service Photo



The Maryland darter is known to exist in only a single stream—Deer Creek, Harford County, Maryland.

Photo by James D. Williams

population and habitat. More specifically, it calls for the establishment of a refuge, development of water level requirements, improvement of water quality, active participation in the development of Deer Creek watershed activities, and development of public and scientific awareness of the species' needs. In the event that additional populations of the darter are found, the recovery plan suggests propagation of the fish in a controlled environment using living streams and/or hatchery rearing systems.

The presence of blue-green algae just downstream from the darters' habitat suggests that water quality standards may need to be improved. Studies are being conducted by the Maryland Water Resources Administration to document these needs.

The Maryland Darter Recovery Plan was developed by employees of the Maryland Department of Natural Resources, Smithsonian Institution Oceanographic Sorting Center, and the Service. Implementation of the recovery tasks will be initiated by the Service's Newton Corner Regional Director and carried out through the Newton Corner Endangered Species Staff. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Suite 700, One Gateway Center, Newton Corner, Massachusetts 02158 (617/ 965-5100).

Southern Sea Otter

The remnant southern sea otter (*Enhydra lutris nereis*) population in California currently inhabits approximately 300 kilometers of nearshore coastal waters from Oceano in San Luis Obispo County to Santa Cruz in Santa Cruz County. Although this population has been slowly expanding in range, the number of otters does not appear to have increased at expected rates in recent years.

The California population has been

under protective State legislation since 1913. In 1972, protective responsibility for the species was assigned to the Federal government under the Marine Mammal Protection Act (MMPA). Further protection was given the sea otter in 1977 when it was listed as Threatened under the Endangered Species Act of 1973 (ESA). Under both the MMPA and the ESA, Federal and State agencies are responsible for protecting the sea otter and its habitat.

The Service has the lead responsibility for developing and implementing the Southern Sea Otter Recovery Plan. The recently completed recovery plan was prepared by the Service in cooperation with the Southern Sea Otter Recovery Team.

The main objective of the recovery plan is to restore the southern sea otter to a non-threatened status and to maintain its population at its optimum sustainable level. Delisting of the species can be considered when the population is stable or increasing at sustainable rates in a large enough area of their

original habitat that only a small portion of the population would be decimated by any single natural or man-caused catastrophe. To reach this point (1) at least one additional sea otter population must be established outside the current population range; (2) the existing population and its habitat must be protected; and (3) the threat from oil spills or other environmental changes must be minimized. The recovery plan outlines strategies to achieve these goals.

Because of its limited range, the southern sea otter is believed to be susceptible to population declines from oil spills. Rates of range expansion and population growth appear to have declined in recent years, while offshore development, production, and transfer of petroleum products continues to increase.

Secondary concerns include:

- vandalism, poaching, and other forms of illegal take;
- contamination of the sea otter and/or its habitat from sources other than oil,
- destruction and degradation of sea otter habitat as a result of coastal zone development or other human activities;
- the likelihood of increased conflict with commercial and recreational fisheries; and
- lack of precise data concerning numerical and functional relationships between sea otters, shellfish, finfish, kelp, and other components of nearshore marine communities.

Sea otter translocation should provide the necessary foundation for ultimately achieving the recovery plan objective. Implementation of the recovery tasks will be initiated by the Service's Portland Regional Director and carried out through the Portland Regional and Sacramento Area Office Endangered



Translocation should provide the necessary foundation for ultimately achieving the Southern Sea Otter Recovery Plan objective.

Photo by Karl W. Kenyon

Species Staffs. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Suite 1692, Lloyd 500 Building, 500 N.E. Multnomah Street, Portland, Oregon 97323 (503/231-6118).

Socorro Isopod

Isopods are members of the Phylum Arthropoda and the Class Crustacea. Most non-marine species of isopod are terrestrial, but of the North American aquatic genera, one is notable. This genus is *Thermosphaeroma*, which contains at least four highly restricted species, all occurring in warm springs. Among these is the Socorro isopod (*Thermosphaeroma thermophilum*), an endemic to three neighboring springs in Socorro County, New Mexico.

This small aquatic animal is now confined to a single water system of an abandoned bathhouse ("The Evergreen"), which is supplied with water from Sedillo Spring. The water system, which now consists of a small (1m x 2m x 0.3m) cement-lined animal watering tank, a smaller pool, and approximately 40 meters of irrigation pipe, is located in the Socorro Mountains just west of the City of Socorro.

The Socorro isopod received little attention from conservationists until 1976, when the New Mexico Department of Game and Fish began to investigate its status. Studies by M.D. Hatch, S.M. Shaster, and others associated with the Department gathered significant information on the biology of the species. Captive populations were established in Albuquerque at the University of New Mexico, at the Rio Grande Zoo, and at Dexter National Fish Hatchery to preserve the genome against possible catastrophic extinction and to maintain diversity among captive populations. The major goal at present is to insure the survival of this species, possibly a relic of the marine biota that inhabited New Mexico millions of years ago.

The Socorro isopod has a flattened body with seven pairs of legs, antennae on the ear, and oar-like extensions (uropods) on the last segment. The grayish-brown color of the body is marked with small black spots and lines which run together forming a broad, black band in the center of each of the thoracic segments. All the exposed edges of the body are tinged with bright orange. The average length is 7.8mm in males and 5.1mm in females.

Although population sizes probably vary seasonally and perhaps annually, the only two published accounts of Socorro isopods made at the Sedillo Spring outflow have been similar. A 1976 report estimated the population to be about 2,400; a 1977 count estimated 2,449.

Because of its small numbers, limited

distribution and limited habitat, the Socorro isopod was listed as endangered by the State of New Mexico on February 10, 1978, and as Endangered by the Service on March 27, 1978. The Socorro Isopod Recovery Plan was prepared by the New Mexico Game and Fish Department under contract to the Service.

The major threat facing the Socorro isopod is loss of habitat. Municipal and private water developments have completely altered the natural habitat of this species by capping the original spring source and by piping the water to other areas. The amount of water diverted to "The Evergreen" water system is limited, and a readily accessible cut-off valve can stop even this flow. Present conditions place the species in a very precarious situation, because continuous flows have not been secured. In addition, protection of habitat from harmful contaminants and other negative impacts cannot be guaranteed, because the habitat is on private land. Even though no adverse biological factors are known to be operating, events such as introduction of predatory and competitive species could change the present situation.

The prime objective of the Socorro Isopod Recovery Plan is to prevent the species' extinction by stabilizing and enhancing its existing habitat, and to initiate recovery by establishing and maintaining at least two additional populations. The plan calls for continued data gathering on the Sedillo Spring and captive populations to provide additional management information.

Necessary to the species' survival is a secure, permanent flow of water, a need which could be met through an agreement with the City of Socorro and the present landowners. The plan recommends this and additional agreements with the landowner to prevent

contamination of the water, loss of vegetative cover and soil cover, and introduction of predatory or competitive species; to protect the area with fencing; and to monitor the status of the existing population. The plan also recommends the expansion of the Sedillo Springs habitat by constructing pools and runs, as well as the establishment and protection of other populations in natural areas.

Implementation of the recovery tasks will be initiated by the Service's Albuquerque Regional Director and carried out through the Albuquerque Endangered Species Staff. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-2321).

Florida Manatee

A Comprehensive Work Plan for the West Indian Manatee (*Trichechus manatus*) has been prepared to assist with the planning and budgeting of future manatee recovery actions. The plan is a revision of the Outline and Implementation Schedule (Parts II and III) of the Florida Manatee Recovery Plan which was completed in 1980 and will be appended to the recovery plan. It identifies 33 public and private organizations which are now working on manatee conservation efforts in Florida.

Implementation of the work plan will be initiated by the Service's Atlanta Regional Director and carried out through the Atlanta Regional and Jacksonville Area Office Endangered Species Staffs. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Richard B. Russell Building, 75 Spring Street, S.W., Atlanta, Georgia 30303 (404/221-3583).



A Comprehensive Work Plan for the West Indian Manatee identifies 33 public and private organizations which are now working on conservation efforts for the species.

Photo by Pat Rose

HOUSE HEARINGS

Continued from page 5

financial assistance to and cooperation with other countries could be severely hampered or even terminated." The State Department urged that the Act be reauthorized in such a manner so as not to conflict with U.S. treaty obligations or foreign policy interests.

Considerable testimony was given by wildlife department representatives of various States regarding bobcat export regulations under CITES. Several States, the International Association of Fish and Game Agencies, the American Fur Resources Institute, and the Wildlife Legislative Fund all recommended that Section 8 of the Act be amended to allow the States to make "no detriment" findings regarding the export of resident species (i.e. bobcat and river otter). The proposal would permit export of Appendix II species so long as the species is subject to management by the State. This position is based on the belief that data and expertise necessary to make such management decisions are better found at the State level.

The Massachusetts Audubon Society and the Humane Society, however, recommended that the "no detriment" authority remain with the Federal Government. This position is based on the assumption that funding provided Federal programs will be more consistent from year to year and that a Federal oversight program would avoid law enforcement problems involved with interstate traffic. These groups urged that no amendment be proposed to solve the bobcat dilemma.

The Wildlife Management Institute agreed that the "no detriment finding" should remain a Federal determination, but objected to the "population estimate" required by the recent court decision banning U.S. bobcat exports. A lengthy discussion of the merits of population trend information versus population estimates ensued. State representatives generally felt the latter to be unnecessary and expensive.

State representatives also called for restored Section 6 funding, for the establishment of experimental populations, and, in general, for more communication on the part of Federal agencies. Some groups called for the taking of an "automatic reservation" by the U.S. delegation to CITES on species listed for protection under CITES but not under the Act. Others characterized the latter as unwarranted.

The World Wildlife Fund called the Act "the most important wildlife conservation law in the United States and probably in the world" and warned that "nothing could damage more our contribution to the worldwide protection of endangered animals and plants than to

weaken the protection now available for our own endangered living resources." World Wildlife urged that interagency regulations implementing Section 7 be kept strong, and that all divisions of taxa (including so called "lower life forms") remain subject to the Act's protection. It called for publication and public review of the Service's priority system implementing Section 4, as required by the 1978 Endangered Species Act Amendments. World Wildlife also reminded the Subcommittee of our nation's responsibility under the Act for furthering the purposes of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere.

Private industry complained of "myriad lists of protected species" which often cause confusion for travelers and

need for a listing process based solely on biological criteria, and made a plea for increased funding for information gathering purposes.

Representatives from the American Mining Congress, National Agricultural Chemical Association, National Forest Products Association, National Oceanic Industries, the Nuclear and Environmental Division of Northeast Utilities, and Western Regional Council all testified regarding what was referred to as the economic hardship some of their constituency had borne because of the Act. Most of these groups voiced objection to the delays surrounding the biological assessment feature of the Section 7 consultation process and they described the existing exemption process as too complicated and time con-

"the most important wildlife conservation law in the United States and probably in the world"

the wildlife products trade, and of what was described as unnecessary paperwork, such as the Service's regulation requiring import/export licenses. (See September 1980 and January 1981 BULLETINS for more information on import/export licenses.)

The 1978 and 1979 Amendments to the Endangered Species Act added economic assessment requirements to the listing process under Section 4 of the Act. This addition was intended to help identify at an early stage potential conflicts between protected species and needed development projects.

Michael Bean of the Environmental Defense Fund, representing 17 other conservation groups, asserted that the political implications of listing certain species which have potential economic impact has curtailed listing activity by the Service. He also testified that the economic analysis requirement itself, in addition to the economic review requirements of Executive Order 12291, the Regulatory Flexibility Act, and the Paperwork Reduction Act, have caused extraordinary delays in listing. He submitted to the Subcommittee an amendment which provides a strictly biological forum from which species listings would be made, and he proposed that economic analyses be delayed and made part of the Critical Habitat determination process—a second step to be completely separate from the listing process. (Under current provisions, listing and Critical Habitat requirements are generally a single process.) The Nature Conservancy also emphasized the

suming. The National Wildlife Federation submitted an amendment to streamline the exemption process, cutting its schedule to about half the currently required time.

Several industry representatives suggested that the Act be amended to provide compensation to parties incurring adverse economic impacts from the Act. Others requested that specific language be placed in the Act to clarify its "taking" provision under Section 9. The desired effect of such a change in the language would be to protect individuals who had received a "no jeopardy" opinion under Section 7 of the Act from the possibility of later being prosecuted for "taking" under Section 9 if their approved action inadvertently resulted in the destruction of one or several members of the species involved. A related topic of discussion involved the definition of "harm" which has been recently redefined by the Service (F.R. 11/4/81) on the grounds that the original language of the Act could be construed as prohibiting the modification of habitat even though there was no actual injury to Endangered or Threatened wildlife or plants (F.R. 6/2/81). Some witnesses, however, felt that the term should be legislatively defined.

Before May 15, 1982, both the House and the Senate will have completed their analyses of the Act and, most likely, will have developed draft legislation to amend it, as needed. Final legislation should be signed by September 30, 1982, the expiration date of the current Act.

New Publications

A new publication, *An Illustrated Guide to the Endangered, Threatened and Sensitive Vascular Plants of Washington* is available for \$6.00 from the Washington Natural Heritage Program, 3111 Seminar Building (SE 3109), The Evergreen State College, Olympia, Washington 98505. The number of copies is limited. Included for each species are scientific name, common name, family, and State and Federal status categories. Prominent characteristics, habitat, range, number of recent occurrences, threats and land ownership are summarized. A line illustration and a dot map showing county distribution are included.

Single copies of "Rare Species of Native Ohio Wild Plants" are available at no charge from the Division of Natural Areas and Preserves, Ohio Department of Natural Resources, Fountain Square, Columbus, Ohio 43224 (614/265-6466). This list contains 202 endangered, 190 threatened, 193 potentially threatened, and 96 presumed extirpated plant species. It differs significantly from the 1980 State plant list.

A report entitled "Potential Present Range of the Blackfooted Ferret as of January 1, 1981" has been completed and distributed. Copies are available from Maurice Anderson, U.S. Fish and Wildlife Service, P.O. Box 250, Pierre, South Dakota 57501.

"Guidelines for Transport and Preparation of Shipment of Live Wild Animals and Plants," a manual for shippers, handlers, and importers of live wild animals and plants is now available for \$13.00 from UNIPUB, 345 Park Avenue South, New York, New York 10010. This

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	24	757

*Separate populations of species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the leopard, gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 10 animals
9 plants

Number of Critical Habitats Listed: 50

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 50

Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

February 28, 1982

manual, which has been endorsed by the Conference of Parties (New Delhi, India—1981) to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), is also available in French and Spanish.

The 1979 U.S. Annual CITES Report which summarizes U.S. international trade in CITES listed species is now available. The report may be purchased in printed form (\$18.00) or in microfiche form (\$4.00) from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 (703/487-4650). Requests for report number PB 82-128646 should be

made to the attention of the sales desk. Purchase requests may be made by telephone if the purchaser has an account with NTIS or if the purchaser has a major credit card.

Single copies of the October 1981 report entitled "Selected Freshwater Invertebrates Proposed for Special Concern in Massachusetts" are available from Arthur J. Screpitis, Massachusetts Division of Water Pollution Control, Lyman School—Westview Building, Westborough, Massachusetts 01581 (617/366-9181). When requesting a copy, please enclose 75¢ in U.S. postage stamps to cover mailing expenses.

March 1982

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Recovery Plan for Virginia Round-leaf Birch is Approved

GOVT. DOCUMENTS
DEPOSITORY ITEM

MAY 10 1982

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The Virginia Round-leaf Birch Recovery Plan was signed March 3, 1982, marking the first time such a plan has been approved by the Fish and Wildlife Service (FWS) for a listed plant. Prepared under contract by Terry L. Sharik, School of Forestry and Wildlife Resources, Virginia Polytechnic Institute and State University (VPI & SU), the document is expected to serve as a guide when there are other plants with similar recovery needs in the future.

cated on three adjacent properties. In 1976, the two private landowners erected high fences around their segments of the population. Later that year, the U.S. Forest Service (UFS) wrote a

plan to protect the two trees (including the largest individual of *B. uber* known) located in the Mount Rogers National Recreation Area, Jefferson National
Continued on page 4

Background

The Virginia round-leaf birch (*Betula uber*) is known from a single population in Smyth County, southwestern Virginia. It was originally discovered by W. W. Ashe in 1914, but attempts to relocate the birch during the 1950's and 1960's were unsuccessful. Later, in 1974, Peter Mazzeo of the National Arboretum rekindled interest in *B. uber* after discovering an undated herbarium specimen collected by H. B. Ayers. Mazzeo's reports prompted a local biologist, D. W. Ogle, to conduct a new search for the birch and, in 1975, the species was rediscovered along the banks of Cressy Creek. It was listed as Endangered in 1978.

Subsequent surveys located at least 40 individuals of *B. uber*. Despite several intensive searches since 1975 of Cressy Creek and adjacent watersheds, no additional populations or individuals have been found. As of July 1980, 20 individuals remained along the creek, with no new recruitment to the population since before 1975. Factors in this decrease include removal of seedlings for cultivation elsewhere, other human activities, and natural causes. The remaining trees along the creek exhibit various degrees of reduced vigor due to a combination of natural factors (primarily overtopping by other trees) and human activities (stress from overcollection of material for research and propagation purposes).

Early Conservation Efforts

The round-leaf birch population is lo-



Scaffolding was erected next to this *Betula uber* individual, allowing researchers to gather pollen and other materials for laboratory study.

Photo by E. LaVerne Smith



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of March.

Region 1—On March 10, two defendants were each given a \$1,600 fine, a 1-year suspended sentence, and 300

hours of community service in a Los Angeles court for shooting a bald eagle (*Haliaeetus leucocephalus*). The bald eagle in question was part of a program to reintroduce the species to Santa Catalina Island in the Southern California

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. Region 2: Arizona, New Mexico, Oklahoma, and Texas. Region 3: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Region 4: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. Region 5: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Region 6: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Region 7: Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Bight. Eagle chicks removed from nests in the Northwest are fledged at hack sites on the island.

Between 50 and 75 bald eagles were observed on the Ft. Lewis Military Reservation along the lower Nisqually River north of Olympia, Washington, in February. This is an unprecedented high count, partially attributable to a reduced food supply (salmon) on other river systems to the north and an unusually large return of chum salmon in the Nisqually system. Service efforts in this area are increasing in response to the expanding eagle population and the increased pressure on the resources from commercial fishing interests and military activities.

The Service has allocated \$30,000 in Fiscal Year 1982 funds for Morro Bay kangaroo rat habitat rehabilitation. On-the-ground work to set back plant succession in chaparral habitat (creating open interspaces in otherwise dense shrub cover) will be preceded by a study to determine the most appropriate manipulation method for improving kangaroo rat habitat.

Service representatives from the Sacramento office are helping to develop an interagency management plan for the Tijuana River Estuarine Sanctuary, which is habitat for three Endangered species: the California least tern (*Sterna albifrons browni*), light-footed clapper rail, (*Rallus longirostris levipes*), and salt marsh bird's beak (*Cordylanthus maritimus* ssp. *maritimus*). The 505 acres of national wildlife refuge lands, along with the U.S. Navy and California State Parks and Recreation lands, will be managed jointly under the plan, in accordance with the Estuarine Sanctuary Program of the Coastal Zone Management Act. Primary emphasis is given to coordinating public use and natural resources objectives, relative to Federal and State listed species, as well as numerous other sensitive species.

Region 2—Approximately 375,000 razorback suckers (*Xyranchea texanus*) were stocked in the Salt River on March 16. A second release of 300,000 is planned for April 6 as part of the continuing conservation effort for the species being conducted in lieu of listing.

A male and female ocelot (*Felis pardalis*) were recently radio-collared as part of a research contract with San Angelo University in Texas. The pair is now being tracked in their south Texas range.

A number of springs around Bylas, Arizona, have been rehabilitated to eliminate the non-native mosquitofish (*Gambusia affinis*) which had recently invaded these spring habitats of the Endangered Gila topminnow (*Poeciliopsis occidentalis*). The remaining topminnows, snails, and aquatic vertebrates

Service Begins Two Status Reviews

The Service is reviewing the status of the Tar River spiny mussel (*Canthytia* sp.) and the spotted bat (*Euderma maculatum*) to determine if these species should be added to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 3/5/82 and F.R. 3/8/82, respectively). The Service is seeking additional biological data on these species as well as information on environmental and economic impacts and effects on small entities that would result from listing them.

Tar River Spiny Mussel

The Tar River spiny mussel is believed to exist only within the Tar River, North Carolina. It has been identified by the North Carolina Wildlife Resources Commission as a species whose numbers appear to have been significantly reduced. The Service has also received two unsolicited research proposals on this species which include information on the mussel.

Even though malacologists have repeatedly surveyed the Tar River for this mussel, fewer than 20 specimens have been observed since it was first discovered in the Tar River at Tarboro, Edgecombe County, North Carolina, in 1968. Little is known of the mussel's life history. It appears most threatened by siltation resulting primarily from agricultural runoff. However, water projects such as reservoir, sewage treatment facilities, and channel clearance projects may have had a negative impact on the species in the past. Although it has yet

to be described, it is considered to be a valid species.

Information regarding the status of this species should be submitted on or before June 3, 1982, to the Area Manager, U.S. Fish and Wildlife Service, 50 South French Broad Avenue, Plateau Building, Room A-5, Asheville, North Carolina 28801.

Spotted Bat

The distribution of the spotted bat, *Euderma maculatum*, is restricted to western North America. It ranges from the Mexican Plateau in the State of Queretaro to the southern border of British Columbia. Although this bat is widely distributed, its occurrence within its known range is very local and patchy.

Euderma maculatum was first collected in March 1890 but by 1959, only 16 specimens had been obtained. Because of increased numbers of biologists working on bats and because of improved techniques for capturing and studying bats, more specimens, new locations, and several small but viable populations have been found in the past 2 decades.

The known viable populations of *Euderma* in the United States occur on lands of the National Park Service in Big Bend National Park, Texas; the U.S. Forest Service in the Gila and Santa Fe National Forest, New Mexico; and on public lands administered by the Bureau of Land Management in the St. George, Utah, District. Most of the other known sites of occurrence also come within the boundaries of lands controlled by one or more of the above Federal agencies.

Even though an apparently large literature base on the species does exist, little substantial knowledge is available on population ecology of *Euderma*. A detailed description of preferred crevice location and internal micro-climate is needed. As with other plecotine bats, *Euderma* probably does not migrate great distances and appears to be particularly sensitive to human disturbance.

Arizona, Nevada, Utah, and Wyoming have designated the spotted bat as a species deserving special consideration. This classification by State wildlife agencies, however, provides only limited protection; disturbance and modification of habitat are not included among State prohibitions.

Comments and data submitted in connection with this review should be submitted on or before June 7, 1982, to the Director (Office of Endangered Species), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Continued from page 4

priority: population ecology, reproductive biology, and evolutionary relationships.

The *B. uber* population at Cressy Creek occurs within a much larger population of related dark-barked birch species (*B. lenta* and *B. alleghaniensis*.) Accordingly, the studies of population ecology are to involve the life cycles of all three species. Investigations of reproductive biology, to be conducted primarily on specimens vegetatively propagated, will include the cellular genetics of reproductive structures, pollen analysis, and studies of controlled crosses between individuals of *B. uber* and *B. lenta*.

Recovery Recommendations

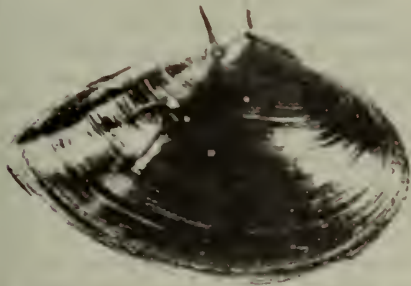
Many of the specific steps outlined in the recovery plan are continuations of previous efforts. Management of the wild population and its habitat will be facilitated by fencing, posting of "no trespassing" signs, a closure order on national forest property, erosion control, and working with property owners. The trees will be monitored for general condition and incidence of disease/insect infestation. Work will continue on vegetative propagation (along with distribution of propagated specimens), and seed and pollen banks will be established.

A determination of essential habitat requirements, including microclimate, soils, and associated vegetation, is another important part of the recovery plan. As is true with other birches, *B. uber* might be characterized as a pioneer species which invades disturbed areas, and without periodic disturbance it may not maintain itself on a local scale. Natural regeneration of *B. uber* at the Cressy Creek site will be encouraged through selective removal of competing vegetation, preparation of seedbeds, and continued monitoring of individuals. The plan also calls for establishment of additional natural populations.

Public information programs will continue as another significant facet of the recovery plan. At the Mount Rogers National Recreation Area, the USFS has installed signs and an elevated walkway directing visitors to the largest individual of *B. uber* (which is fenced), to channel public access and for environmental education purposes.

* * * * *

Copies of the Virginia Round-leaf Birch Recovery Plan are available from the Regional Office, U.S. Fish and Wildlife Service, Suite 700, One Gateway Center, Newton Corner, Massachusetts 02158 (Attn: Dick Dyer).



A spiny mussel. Reprinted from the Proceedings of a Symposium on Rare and Endangered Mollusks (Naiads) of the U.S., U.S. Fish and Wildlife Service.

Sea Turtle Identification Poster Available



Pictured above is the new sea turtle identification poster jointly developed by the National Marine Fisheries Service and The Sea Turtle Rescue Fund of the Center for Environmental Education. Seven of the eight species of sea turtle are protected under the Endangered Species Act of 1973.

A full-color sea turtle poster, designed to assist in the proper identification of eight sea turtle species, has been jointly developed by the National Marine Fisheries Service (NMFS) and The Sea Turtle Rescue Fund of the Center for Environmental Education (CEE). The poster is meant to be of specific use to volunteer workers upon whom many sea turtle protection efforts depend, and to be of educational use for the general public.

Printed on a water-resistant surface,

the 24 x 36 inch poster depicts each of the eight sea turtle species in their natural habitats. Artist Marvin Bennett, under the technical supervision of Dr. Peter C. H. Pritchard, has faithfully rendered each species to allow a sea turtle observer a means of identifying an encountered animal. It is vivid in its detail and in depicting characteristic behavior of each species.

The first copy of the poster was given by representatives of NMFS and CEE to Dr. Archie Carr, Jr. at a ceremony held at the Main Commerce Building in

Washington, D.C. on March 18, 1982. Dr. Carr was recognized for his important contribution to sea turtle conservation, both in the United States and abroad.

Single copies of the poster may be obtained free of charge from the NMFS Washington and regional offices or by contacting Charles A. Oravetz, National Marine Fisheries Service, Southeast Region, 9450 Koger Boulevard, St. Petersburg, Florida 33702 (813/893-3366 or 813/893-3720).

VIRGINIA ROUND-LEAF BIRCH

Continued from page 1

Forest. Among its recommendations were fencing-off the two trees, construction of visitor information facilities near the large tree, notification of persons and agencies in the area whose activities could affect the population, and development of a research plan. Most of the USFS recommendations had been carried out by the time the plan was released in late 1976.

Management was further enhanced by creation of the *Betula uber* Protection, Management, and Research Coordinating Committee. This committee acts as an informal recovery team, and is comprised of representatives of the FWS, USFS, VPI & SU, National Arboretum, and Virginia Department of Agriculture and Consumer Services. No undocumented removals of individuals

have occurred since formation of the committee and access to materials on public land was controlled. Three trees and one other seedling have died of natural causes. A new coordinated search for other populations was conducted during the summer of 1977 but, as with the earlier efforts, none were found.

Propagation efforts for *B. uber* have been concentrated at the National Arboretum in Washington, D.C., and this facility has the responsibility for disseminating living and dead specimens. During 1975-1977, approximately 50 individuals were produced from rooted cuttings which originated from current shoots of three saplings growing at the Arboretum. Forty of the individuals propagated from cuttings remain at the Arboretum, while the remaining ten have been distributed to seven different botanical garden locations. Unfortunately, production of additional indi-

viduals from cuttings of older trees and germination from seeds has been largely unsuccessful.

Research

A research program for *B. uber* was initiated in 1978 when the coordinating committee convened a group of biologists with experience in other birch species to develop a research plan. The first two recommendations of this advisory panel were that any research efforts which might alter the natural population be postponed until a detailed population assessment is made, and that vegetative propagation at the Arboretum be continued in order to maintain the gene pool, provide individuals for establishing additional wild populations, and produce material for studies of reproductive biology and genetics. Three specific areas of research were given

Continued on page 5

had been removed from the springs and their outflows prior to the application of the toxic chemicals used for fish control, and were replaced later after the chemicals dissipated.

The two small bald eagle chicks whose nest tree was imperiled by the rising Horseshoe Reservoir in Arizona (see March 1982 BULLETIN) were removed literally moments before the nest was inundated. The chicks were held at the Phoenix Zoo while attempts were made to reestablish the nest above flood levels. When these attempts failed, the chicks were placed in a nearby bald eagle nest whose adult pair was trying to incubate non-viable eggs. The pair readily accepted the chicks and began feeding them immediately.

A different bald eagle adult, thought to be a female, recently disappeared from its territory shortly after being seen in combat with a golden eagle (*Aquila chrysaetos*) over Tonto National Forest, Arizona. The remaining adult then became disinterested in feeding its 3-week old chick. After 6 days without the chick being fed, U.S. Forest Service (USFS) biologists took it and began feeding it. In cooperation with the FWS, the USFS took the chick to a distant nest where another chick had disappeared. There it was accepted and fed by the resident bald eagle pair.

Region 3—Endangered Species Staff members met recently with representatives of the Iowa Department of Conservation to discuss contract work on the bald eagle, Indiana bat (*Myotis sodalis*), Higgins' eye pearly mussel (*Lampsilis higginsii*), and Iowa Pleistocene snail (*Discus macclintockii*).

Work is progressing on a new miniature telemetry package to be used in research on the Kirtland's warbler (*Dendroica kirtlandii*). The transmitter, which will weigh 1.2 to 1.3 grams, is being developed by Clyde Jones and his staff at the Denver Wildlife Research Center. Prior to use on the Kirtland's warbler, which weighs an average of 14 grams, it will first be tested on a similar-sized, migratory species. The transmitter is expected to have applications for research on a wide variety of bird species.

Region 4—The Florida Game and Fresh Water Fish Commission has reported the radio collaring of six Florida panthers (*Felis concolor coryi*) in south Florida. Two males and two females have been collared in the Fakahatchee Strand area. One of these females was pregnant and had to have buckshot removed during the tagging operation. Two males have also been tagged in the Raccoon Point area of the Big Cypress National Preserve.

Funding has been approved for divers from the Tennessee Valley Authority and the Service to conduct a survey to determine if the main channel of the

Tennessee River contains a viable self-sustaining population of snail darters (*Percina tanasi*).

In order to determine potential hacking sites for peregrine falcons (*Falco peregrinus*), the Service and the North Carolina Wildlife Resources Commission are conducting a survey on the great-horned owl (*Bubo virginianus*), a potential predator on young peregrines. The peregrine hacking effort is scheduled to begin in 1984.

Five Mississippi sandhill cranes (*Grus canadensis pulla*) have been released on the Mississippi Sandhill Crane National Wildlife Refuge. These cranes were young-of-the-year obtained from the Patuxent Wildlife Research Center. Each crane was radio-collared to determine movements and habitat utilization.

Region 5—The Virginia Round-leaf Birch Recovery Plan has been approved (see the story in this month's BULLETIN), the Chesapeake Bay Bald Eagle Recovery Plan has been submitted to the Director for approval, and the Delmarva Fox Squirrel Recovery Plan, originally approved in 1979, has been revised, and submitted to the Washington office.

Adult peregrine falcons (*Falco peregrinus*) are returning to nesting towers in Virginia and New Jersey, and an increase in numbers of nesting pairs is anticipated for this season.

Plans are progressing for a repeat of last summer's intensive public information and education program on the Robins cinquefoil (*Potentilla robbinsiana*). One of the few populations of this plant is found along the Appalachian Trail in the White Mountains of New Hampshire. The program is a cooperative effort of the Fish and Wildlife Service, the U.S. Forest Service, and the Appalachian Mountain Club.

Region 6—The Wood Buffalo-Aransas whooping crane (*Grus americana*) flock is monitored each spring and fall during migration. According to the Service's Pierre, South Dakota, office, which accumulates the sightings, there were

58 confirmed and probable sightings in fall 1981. Recorded observations of migrant whoopers began on August 30 in Canada and September 29 in the U.S. Sightings were reported from Alberta (3) and Saskatchewan (16) in Canada, and Montana (1), North Dakota (6), South Dakota (3), Nebraska (6), Kansas (6), Missouri (1), Oklahoma (8), and Texas (8). Arrivals at the Aransas National Wildlife Refuge in Texas began on October 22.

The status of the interior least (little) tern (*Sterna albilfrons albilfrons*) is drawing attention as more information on the species is compiled. In 1981, Regions 2, 3, 4, and 6 assembled the available information, and James E. Ducey consolidated it into a summary report. The report may result in a concerted field effort toward determining an improved understanding of the status of the species.

In February, a meeting was held in Manhattan, Kansas, to discuss current studies and management activities for the least tern. State, Federal, and private organizations were represented. Of ultimate concern was what can be done through coordinated activities to improve and standardize the information base for least tern populations and their habitat. The group recognized the need for more precise information about the tern, but also acknowledged the limited funding available. The recommendations encourage interested parties to (1) determine least tern distribution, (2) determine the adult-subadult population, (3) conduct a periodic, Statewide status survey once every 3 years (targeted to start in 1983), (4) identify habitat being used and threats to that habitat, (5) inform other State and Federal biologists of management techniques developed and other studies conducted, and (6) funnel information to a central record-keeping location (to be determined).

In February, the Billings office hosted a meeting on management of grizzly bears (*Ursus arctos horribilis*) in the

Continued on page 6



Whooping cranes (*Grus americana*) in flight over Aransas National Wildlife Refuge.

Conference

The First Bicentennial Conference on Research in California's National Parks will be presented by the Cooperative Park Studies Unit, University of California, Davis, September 9-10, 1982. The purpose of the conference, which will be held in Davis, is to provide a scientific forum for the presentation and discussion of research related to the biological and sociological resources of California's National Parks. It is designed for anyone who has conducted research in or is interested in National Park Service research and resource management. For more information call 916/752-7119.

New Publication

The *U.S. List of Endangered and Threatened Wildlife and Plants* (50 CFR 17.11 and 17.12), reprinted January 1, 1982, is now available. Please request copies from Office of Public Affairs—Publications, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

REGIONAL BRIEFS

Continued from page 3

Yellowstone Ecosystem. Representatives of two National Parks, five National Forests, three States, Bureau of Land Management, and FWS met to review management of grizzly bears and their habitat. Also in February, Billings personnel attended a meeting on grizzly bear relocation guidelines. In attendance were representatives from the U.S. Forest Service, Bureau of Land Management, National Park Service, Bureau of Indian Affairs, and Montana Department of Fish, Wildlife and Parks. Attendees reviewed sites and proce-

dures for relocating problem grizzly bears in 1982.

A Montana Bald Eagle Working Group has been formed, and in January, the FWS, Montana Department of Fish, Wildlife and Parks, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Forest Service, and university scientists met to coordinate efforts on the bird in Montana. In February, the group met to establish procedures and coordination for a Statewide bald eagle nesting survey in Montana in 1982.

The Wyoming Game and Fish Department will be the lead agency in black footed ferret (*Mustela nigripes*) recovery in Wyoming. The department has established a Black-footed Ferret Advi-

sory Team (BFAT), consisting of representatives from the Wyoming Game and Fish Department, Bureau of Land Management, Forest Service, FWS, University of Wyoming, and private landowners. Any input pertinent to the Service should be directed to the Endangered Species Coordinator at the FWS Billings office.

Region 7—The Japanese Conservation Bureau has formally requested from the Service a loan of Aleutian Canada goose (*Branta canadensis leucopareia*) breeding pairs to help that country reestablish a wintering population of the Endangered bird. Aleutian Canada geese historically wintered in Japan, as well as from British Columbia to California in North America.

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Senate Hearings Held on Texas Orchid Listed Reauthorization Bill as Endangered

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By E. LaVerne Smith

Testimony on S.2309, a U.S. Senate bill to reauthorize and further amend the Endangered Species Act of 1973, was given on April 19 and 22, 1982, before the Environmental Pollution Subcommittee, Committee on Environment and Public Works. The hearings were another step toward extension of the Act, which expires September 30, 1982.

The bill to reauthorize Endangered Species Act appropriations for 3 years was introduced on March 30, 1982, by subcommittee chairman Senator John H. Chafee (R-RI) on behalf of himself, Senator Slade Gorton (R-WA), and Senator George J. Mitchell (D-ME). "Based upon a recognition of the interdependent nature of man and his environment," Senator Chafee said, "the 1973 Act is crucial to the future well-being of mankind." Senator Chafee opened the hearings on the bill with a statement that it is intended to "maintain the integrity of the Endangered Species Act" while offering legislative solutions to several matters of concern voiced at the December 8 and 10, 1981, oversight hearings.

One issue addressed in S.2309 is the "experimental population" concept. As defined in the bill, the term would apply to any population of a listed species that is released, for approved conservation purposes, outside the species' current range, provided that the experimental population is wholly separate geographically from nonexperimental populations. Under the amendment, an experimental population deemed necessary for conservation of a species would be treated as a Threatened population, which would allow for increased management flexibility. Experimental populations determined not essential would be treated as populations proposed for listing (except for experimental populations occurring on national wildlife ref-

uges). No Critical Habitat would be designated for nonessential populations.

Among the changes that would occur in the listing process is a requirement concerning action on petitions to add a species to, or remove it from, the U.S. List of Endangered and Threatened Wildlife and Plants. If the petition is judged to contain substantial scientific information, a decision on whether or not to proceed with the action would have to be published within one year of receipt of the petition. Procedures on implementation of Section 4, including priority systems designed to rank species for listing and recovery actions, would also be published in the *Federal Register*.

The Federal share of Section 6 State cooperative agreement program costs would be increased from 66 2/3 percent to 75 percent, and from 75 to 90 percent when two or more States have joint endangered species projects. These formulas would bring endangered species grant cost-sharing ratios into alignment with other Federal programs to aid fish and wildlife restoration. Under S.2309, endangered species funding assistance to the States could be appropriated up to \$6 million for each of Fiscal Years 1983, 1984, and 1985.

A number of amendments would be made in Section 7 of the Act under the Senate bill. Among the changes would be a streamlining of the exemption process. The initial review board would be abolished, and its function would be transferred to the Secretary of the Interior (or Commerce, as appropriate), who would make the threshold decisions and prepare the reports to the Endangered Species Committee (ESC). The new process would allow 20 days for the threshold decision, 150 days for the report, and 30 days for the ESC decision,

Continued on page 6

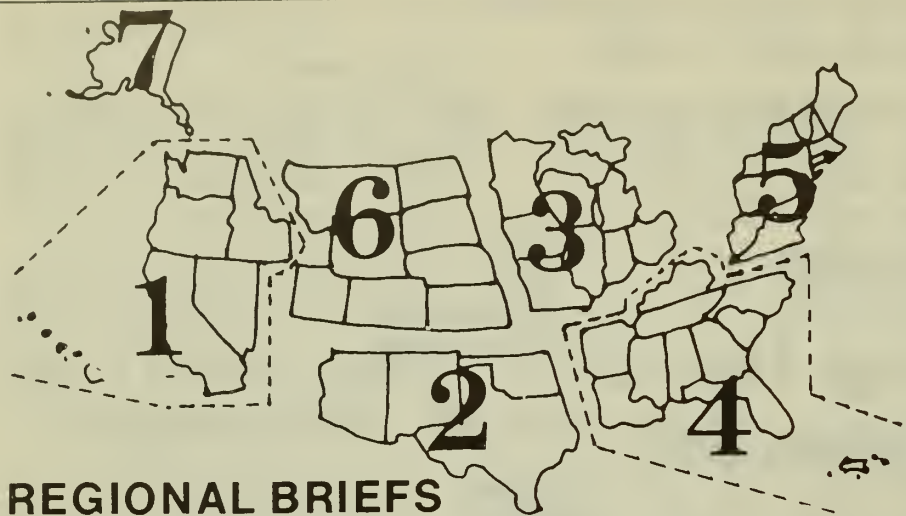
Spiranthes parksii (Navasota ladies'-tresses) was determined Endangered on May 6, 1982, and will now receive protection under the Endangered Species Act. Critical Habitat for this orchid was not determined because of the threat of overcollection.

Fewer than 20 individuals of the plant are known to exist today in two populations within Brazos County, Texas. One population occurs near College Station, where urbanization is increasing. The second is on a ranch where the primary use of the land is hunting. Both sites are privately owned and neither population was under protective status. Due to its rarity and the widespread interest in orchid cultivation, this species may also be sought by collectors. The extremely small total population sizes make *Spiranthes parksii* highly vulnerable to extinction.

Continued on page 4



Spiranthes parksii, an extremely rare orchid, was listed as Endangered this month.



Endangered Species Program regional staffers have reported the following activities for the month of April:

Region 1—The Service's Pacific Islands Area Office in Honolulu, Hawaii,

will conduct a forest bird survey for the Mariana Islands (Rota, Tinian, and Saipan) from March 8 to June 14, 1982. The survey team includes John Engbring, Supervisory Biologist, and his team members, Celestino Aguon, Phillip

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U.S. Fish and Wildlife Regions

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Ashman, and Peter Pyle. Guam will be used as a base of operations for the survey. On Saipan a training session will be conducted on survey methodology and forest bird identification for the Department of Natural Resources staff. On Ponape the census methodology will be tested for cover/terrain characteristics of that island. Throughout the trip, Engbring will be meeting with government officials and acting in a liaison capacity. The survey has been scheduled to coincide with the most favorable weather conditions and the period of most active nesting for forest birds. At other seasons of the year, heavy rains and/or typhoons might be encountered, or birds may be considerably less active and thus overlooked on the survey.

Recently, a Canadian investment firm acquired 19,000 acres of undeveloped land in the Coachella Valley, California. The area, which includes a majority of the Critical Habitat for the Threatened Coachella Valley fringe-toed lizard (*Uma inornata*), represents the largest contiguous parcel ever assembled in the Coachella Valley. Although no official development plans have been announced, indications are that the firm anticipates providing facilities for the fast growing computer industry. It is not clear at this time how much of the area will be developed, and therefore the potential impacts to the lizard are largely unknown. It may be possible to work out agreements with the developers for protection of the lizard while plans are still in the formulation stage.

Copies of the approved Southern Sea Otter Recovery Plan are available from the Fish and Wildlife Reference Service, Unit 1, 3840 York Street, Denver, Colorado 80205 (800/525-3426), at a cost of 10¢ per page, 70 pages. The plan outlines a program to recover the southern sea otter (*Enhydra lutris nereis*) to the non-threatened status by establishing one or more additional colonies within the otter's range. Prior to translocation, however, several studies are necessary.

The plan outlines additional monitoring activities, and suggests several ways to reduce the threat of oil spills. Upgrading of law enforcement and public education activities are also recognized as very important to the recovery effort.

Region 2—Another 250,000 razor-back suckers (*Xyrauchen texanus*) have been stocked in the Salt River, Arizona, bringing the year's total to about 700,000.

This summer's personnel and equipment for the Kemp's Ridley sea turtle (*Lepidochelys kempii*) nesting beach project at Rancho Nuevo, Mexico, are assembled in Texas but, as of May 3, the necessary permit from the Departamento de Tesca had not been received.

No conservation actions can be undertaken without this permit. The region anticipates that the permit will be issued in early May.

The leopard darter (*Percina pantherina*) listing and Critical Habitat designation was upheld by the U.S. Court of Appeals for the 10th District. In an opinion issued April 12, the Federal listing was affirmed and the litigation was dismissed for lack of standing on the part of the plaintiffs, the Glover River Organization.

Region 3—The final draft of the Gray Bat Recovery Plan has gone to the Director for approval; the technical review draft of the Northern States Bald Eagle Recovery Plan and the agency review draft of the Higgins' Eye Pearly Mussel Recovery Plan are both out for comment.

A bald eagle (*Haliaeetus leucocephalus*) pair is nesting this spring in Missouri, which is the first confirmed nesting in that State since the early 1960's. A protective zone has been established around the nest tree. Further information will appear in future issues of the BULLETIN.

Region 4—The commissioners of the Florida Game and Fresh Water Fish Commission have recently voted to prohibit the artificial feeding of the Endangered Key deer (*Odocoileus virginianus clavium*). This proposed regulation will prohibit such activities by the public as the actual feeding of deer, the attempt to feed, and the enticement of deer with food. The State anticipates that this regulation will become effective in early June.

Four status surveys have been approved for animals and plants in the Atlanta Region. The Denver Wildlife Research Center Field Station in Belle Chasse, Louisiana, will study the Louisiana and black pine snakes (*Pituophis melanoleucus ruthveni* and *P.m.*

lodingi, respectively) and the gopher tortoise (*Gopherus polyphemus*) where its range overlaps that of the snakes. Pine snakes, like the Threatened eastern indigo snake, (*Drymarchon coris couperi*) are often associated with gopher tortoise burrows. Another status survey covers four Florida sand scrub plants: *Lupinus aridorum*, *Lupinus westianus*, *Dicerandra cornutissima*, and *Dicerandra frutescens*. The other two surveys deal with the Tar River spiny mussel (*Canthyria* sp.) and the Puerto Rican sharp-shinned hawk (*Accipiter striatus venator*).

The large and as-yet-unexplained die-off of manatees (*Trichechus manatus*) in the Ft. Myers area of Florida has continued. The die-off started in February and, as of May 1, there had been at least 37 dead manatees reported from the general vicinity of the Caloosahatchie River outlet. Investigations by the National Fish and Wildlife Laboratory in Gainesville, Florida, have not confirmed the reasons for the mortalities, but red tide organisms are suspected. Necropsies show that the manatees have ingested tunicates, commonly known as "sea squirts," which are known to filter out and hold the red tide toxins.

Region 5—Peregrine falcons (*Falco peregrinus*) have returned to the Franconia Notch area of New Hampshire where they successfully nested last year. At least four other pairs are on eggs or have young in New Jersey. Several other pairs are also known in the area from Chesapeake Bay northward.

Bald eagle chicks produced at the Patuxent Wildlife Research Center have been successfully introduced into nests in New Jersey and New York.

Region 6—In the summer of 1981, western South Dakota and western Kansas were used as test areas where

posters, newspaper articles, radio and television announcements, and local contacts were used to attempt stimulating reports of black-footed ferrets (*Mustela nigripes*). Fifteen sightings were reported in South Dakota and eleven in Kansas. Although no ferrets were located, about 25 percent of the observations were determined to be "probable" sightings of black-footed ferrets. This work will continue in the summer of 1982.

Recent studies by Jim Enderson, Colorado College; Jerry Craig, Colorado Division of Wildlife; and Bill Burnham and Dan Berger, Peregrine Fund (Fort Collins, Colorado) have shown that the eggshells of American peregrine falcon (*Falco peregrinus anatum*) eggs laid in the wild in Colorado in 1981 were encouragingly thicker than those laid from 1973 to 1980. The wet weight content of DDE (a metabolite of DDT) in peregrine eggs in 1980 averaged 13 parts per million (ppm), a large drop from the 20 ppm found in egg contents through 1979. A major part of the DDE being picked up by peregrines is probably obtained from migrant insectivorous prey the falcons eat. Collections and analyses of 29 prey species of birds available to peregrines show that migrants often contained well above 1.0 ppm DDE, a level of contamination which has been shown in other studies to be sufficient to produce the degree of shell-thinning observed in Colorado peregrines. Since DDT is banned from use in the U.S., it is believed that the migrant prey species are picking up the DDT in the winter when they are south of the U.S. This belief is backed by the fact that some other raptors which do not feed on migrant insectivores, such as the bald eagle (*Haliaeetus leucocephalus*), have made a stronger comeback than peregrines since DDT was banned.

The final report on the White River Fishes Study was submitted to the Bureau of Land Management by the Service's Colorado River Fisheries Study Team. Habitat in the White River (Utah) does not appear suitable for bonytail chubs (*Gila elegans*), humpback chubs (*Gila cypha*), or razorback suckers (*Xyrauchen texanus*). No razorback suckers or bonytails were collected during the study, and only one suspected humpback was collected. However, a number of Colorado squawfish (*Ptychocheilus lucius*) were captured and substantial data were obtained on squawfish. One of the more interesting findings was a 382-mile movement in 5 months by a radio-equipped Colorado squawfish. Part of the mileage involved a 129-mile swim downriver and a subsequent return. This information, plus data gained from other radio-equipped and tagged squawfish showed that



Photo by W. H. Julian

New regulations will prohibit the artificial feeding of the Endangered Key deer.

Texas Orchid Listed

Continued from page 1

Background

Spiranthes parksii was first collected by H.B. Parks along the Navasota River in 1945. D.S. Correll described the species in 1947, based upon the Parks collection. Subsequent efforts to relocate the species in the late 1940's and 1950's were unsuccessful, and it was thought to have become extinct. Fortunately, however, P.M. Catling rediscovered the species in Brazos County near College Station in 1978. Recent searches have resulted in rediscovery of a second population near the type locality.

Spiranthes parksii is a small herbaceous perennial orchid which measures approximately 30 cm tall. Most of the leaves are basal and grass-like. The flowering stalk is slender, bearing spirally arranged, small, white flowers with a green mid-vein. This orchid occurs in post oak woodlands. *Spiranthes parksii* is one of the rarest and least known orchids of North America.

Legislative and Regulatory History

Actions leading to Federal protection for this orchid began in 1973 with the inclusion of plants in the Endangered Species Act. Section 12 of the 1973 Act directed the Smithsonian Institution to compile a report on Endangered, Threatened, and extinct species. The resulting 1975 report included *Spiranthes parksii*; it was treated as a petition by the U.S. Fish and Wildlife Service, and published as a notice of review on July 1, 1975. This action was followed on June 16, 1976, by a proposal to list a number of plants, including *Spiranthes parksii*. Due to subsequent requirements of the 1978 Amendments to the Act, the 1976 proposal was withdrawn. *Spiranthes parksii* was repropoed on June 18, 1980, based on sufficient new

information. After complying with Executive Order 12291 and the Paperwork Reduction Act, which require that the potential economic effects of a rulemaking be considered, the Endangered Determination was published. Critical Habitat was not determined due to the possibility of further jeopardizing the species.

Protection Under the Act

This rare orchid will now receive the protection of the Endangered Species Act of 1973, as amended, as it applies to plants. Regulations detailing the general prohibitions and exceptions applying to Endangered plants are found at 50 CFR Section 17.61. These prohibitions, in part, make it illegal to import export transport, or offer for sale in interstate commerce specimens of *Spiranthes parksii*. Taking of Endangered and Threatened plants is not prohibited under the Act, and private landowners are not affected.

Section 7 of the Act provides for inter-agency consultation, and requires Federal agencies to evaluate the affects of their actions on listed species. No Federally authorized, funded, or permitted actions are known to be jeopardizing the existence of *Spiranthes parksii*. The U.S. Army Corps of Engineers has determined that the Millican Reservoir project will not affect this orchid.

Recovery actions are now required under the Act for this species. Through volunteer conservation agreements or other methods, the Service hopes to negotiate further protection for the two sites occupied by *Spiranthes parksii*. Species biology research, propagation research, proper habitat management, and educational programs are a few of the activities which a recovery plant for this species might address.

population of *Agrostis rossiae* in the world.

A management agreement has also been consummated with the U.S. Forest Service for *Astragalus montii* (Heliotrope milk-vetch), a rare Utah plant that is only known to occur on the Wasatch Plateau in Sanpete County, Utah. (See the February 1981 BULLETIN for more information.)

Region 7—The revised draft of the preliminary Alaska Peregrine Falcon Recovery Plan and the final revised Aleutian Canada Goose Recovery Plan

Mariculture Operation Exemption Again Sought

The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) have received a petition seeking an exemption for captive-bred green sea turtle (*Chelonia mydas*) products from the existing prohibition in commerce in the species (F.R. 4/1/82). It was filed on January 22, 1982, by the Pacific Legal Foundation and the Association for Rational Environmental Alternatives on behalf of the Cayman Turtle Farms.

Background

The green sea turtle was listed for protection under the Endangered Species Act of 1973, as amended, on July 28, 1978. No exemption for mariculture operations was provided in the final regulation which became effective on September 6, 1978. On August 15, 1978, Cayman, which is engaged in the captive breeding of the species, requested that the mariculture issue be reviewed, and that the regulations be stayed while the decision was being reconsidered. FWS and NMFS agreed to review any new evidence applicable to the regulation, but refused to grant the stay of regulations.

Cayman filed suit in the U.S. District Court for the District of Columbia on September 5, 1978, challenging the agencies' decision. In a Decision Memorandum issued on December 5, 1978, FWS and NMFS restated their rejection of the mariculture operation. The decision was judicially upheld in 1979, in *Cayman Turtle Farm v. Andrus*, 478 F. supp. 125 (D.C. Cir. 1979), *aff'd men.*, No. 79-2031 (D.C. Cir. December 12, 1980).

The petitioners are proposing implementation of the exemption by means of a permit provision similar to that proposed by FWS and NMFS in 1975. (See 40 FR 21977, 21985, 1975). Current regulations governing the species are found in 50 CFR Part 17 and Parts 222 and 227 (1980).

have been submitted to the Director for approval.

The 1982 field season began April 16 when the first returning peregrine falcon was sighted. Migration studies being undertaken this spring and fall will determine the presence of a coastal migration route in the Yakutat area of the Gulf of Alaska. If a major migration route for peregrines or other raptors is found, the feasibility of establishing a trapping and banding station will be examined. Service biologists Phil Schempf, Ted Swen, and volunteer Pete Dunn are conducting the migration study.

REGIONAL BRIEFS

Continued from page 3

some are migratory while others are sedentary. This difference in behavior may be due to sexual maturity, with sexually mature individuals making long distance spawning migrations.

A Memorandum of Understanding was signed with the National Park Service, Yellowstone National Park, for the protection and management of *Agrostis rossiae* (Ross bentgrass). Yellowstone National Park contains the only known

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

New Guidelines for Export of Appendix II Species

In the first of a series of notices concerning the export of certain Appendix II species, the Service requested current status data and comments on new guidelines to be used in making export findings for the 1982-83 season (F.R. 4/5/82). Species involved are bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), Alaskan gray wolf (*Canis lupus*), Alaskan brown bear (*Ursus arctos*), American alligator (*Alligator mississippiensis*), and American ginseng (*Panax quinquefolius*).

Comments on the preliminary notice were received until May 7, 1982; the Service plans to publish proposed findings and a proposed rule on the guidelines later in May 1982, and again seek public comment. By late August 1982, the Service plans to publish final findings and a final rule, effective upon date of publication.

Background

The U.S. District Court for the District of Columbia ruled on December 15, 1981, that the criteria used by the Scientific Authority in advising on whether export of bobcat would not be detrimental to the survival of the species did not incorporate the guidelines called for by the Court of Appeals, which required that findings for bobcat export be based on "reliable estimates of the bobcat population and data showing the total number of bobcats to be killed, in each State involved." The new guidelines are proposed to comply with the Court's criteria.

In order to avoid complicating the process, the Service intends to use the same general guidelines for the lynx, river otter, and American alligator, as for the bobcat. Recognizing that the new guidelines may not be feasible for each species, the Service invites comments on how best to take differences in biology and management considerations of each species into account. The

new guidelines necessarily apply only to bobcat export, because of the court ruling.

The newly proposed guidelines describe acceptable methodologies for making population estimates and how the Service will assess reliability. The guidelines make clear that a reliable population estimate is a prerequisite to finding that export will not be detrimental to the survival of the species. They also describe considerations underlying allowable kill levels and make the determination of such levels a requirement for a no detriment finding.

The Alaskan populations of gray wolf and brown bear were listed on Appendix II only to control trade in species whose appearance either as a whole specimen, as parts (skins, etc.), closely resemble that of other endangered or potentially threatened species or populations. Accordingly, the Service will consider the impact of trade in these species or the effectiveness of CITES in controlling trade in other related species of populations when determining conditions under which export may be allowed.

The Service intends to use the same general criteria as were used last year in determining if exports of American ginseng will be detrimental to the survival of the species. A great increase in exports of American ginseng seed in the past year suggests that State management efforts should focus on seeds as well as roots in the interest of conserving this species.

Evidence of legal taking of bobcats, lynx, river otter, Alaskan gray wolf, Alaskan brown bear, and American alligator which is required by the Management Authority, is provided by State tagging systems. The use of self-locking, permanent tags marked to specify State, year of take, species, and a serial number will again be required for the 1982-83 season. States that were previously allowed to use other types of tags must this year use tags of the type specified by the Service.

CITES Plants Reviewed

The Service has announced the preliminary results of its review of North American plants included on Appendices I and II of CITES (F.R. 4/2/82). Public comment on the review is invited, and all statements received by August 31, 1982, will be considered in determining whether the Service should submit proposals to the CITES Secretariat for circulation to the Parties.

At last year's CITES conference at New Delhi, India, the Parties resolved to conduct a 10-year review of the appendices, and a notice initiating Service participation in this process was published on June 30, 1981 (see the July 1981 BULLETIN). The review is being conducted in coordination with the Canadian Wildlife Service (CWS) and the Mexican Department of Agriculture and Hydraulic Resources (MDAHR). Both biological and trade information on CITES species native to North America (and the islands under U.S. jurisdiction) was solicited. Comments were received from Federal and State agencies and from a number of interest groups.

The Service has proposed to recommend transfer from Appendix II to Appendix I, 21 taxa (species, subspecies, and varieties) of native U.S. cacti listed as Endangered or Threatened under the Endangered Species Act of 1973. In addition, the Service proposed the same action for 51 candidate taxa of cacti on the grounds that they appear to be actually or potentially threatened with extinction by commercial trade.

Continued on page 12

Back Issues of Bulletin Available

Back issues of the *Endangered Species Technical Bulletin* are available from the Fish and Wildlife Reference Service in Denver, Colorado. This service is an agency of the Denver Public Library and is funded by the U.S. Fish and Wildlife Service, Division of Federal Aid. Available "hard copy" issues will be sent free of charge upon request for as long as the supply lasts. A set of back issues (July 1976 November/December 1980) is available on microfiche for \$2.00. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy to Fish and Wildlife Reference Service, Unit 1, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

SENATE HEARINGS

Continued from page 1

for a total of 200 days compared to the current 360. There are no provisions for extensions of these deadlines. The ESC also would determine whether an irreversible or irretrievable commitment of resources was made by the exemption applicant.

In response to considerable concern voiced at the December hearings, the consultation amendments would exempt actions carried out by a Federal agency under a "no jeopardy" biological opinion from the taking prohibitions of Section 9. Another change in Section 7 would be a requirement that the permit or license applicant would be included in any agreement to an extension of time necessary for preparation of a biological opinion.

Issues arising out of the implementation of CITES and the litigation on export of bobcat skins were addressed in S.2309. The Secretary would determine

ally fits these criteria, Arnett expressed support for the subcommittee's approach and recommended some clarifying language.

Among Interior's requests were that a number of points relating to the experimental population concept be more closely defined. Other recommendations were that the listing process be further clarified. One area of confusion, in particular, is how the bill's deadlines on consideration of petitioned species would affect the Fish and Wildlife Service's existing priority system. Another question was whether a species can be listed if its Critical Habitat is not determinable at the time of listing but could be determined in the future. With regard to status reviews, Arnett cited their value as a tool in making initial determinations on proposals to list species, and he recommended that they continue to be required as part of the listing process. Arnett also suggested that the scientific standard for "no detriment" findings under implementation of CITES be worded as the "best available biological

tion, testified for the Department of Commerce. Although Commerce continues to recommend the bill it proposed (S. 2310), which would extend the Endangered Species Act for 2 years without amendments, Stevenson offered a number of comments on S.2309. Again, the proposed definition of experimental population was cited for clarification. Further, Commerce opposes amendments to the listing process that it believes would give the Secretary of the Interior the authority to rewrite protective regulations promulgated by the Secretary of Commerce. Stevenson also advised that requiring Critical Habitat designations to be concurrent with listings may cause undue delays in the rulemakings, although status reviews were recommended as a mandatory early step in the process. The proposed requirement to conduct reviews of species on the lists of "professional scientific organizations," as well as those of State and foreign governments, was seen as another possible source of delay, and Commerce asked that information from such entities be considered advisory only. Other language in S.2309 was mentioned as needing clarification, particularly the amendment outlining schedules for various steps in the listing process. Commerce also would oppose any deletion of authority to list foreign species.

NOAA objects to the proposed amendment in the consultation process that would require the permission of any license or permit applicant for an extension of a biological opinion deadline. On another matter relating to Section 7 of the Act, NOAA believes that Federal agencies receiving "no jeopardy" opinions should remain subject to the taking prohibitions of Section 9.

Speaking for the Department of State was David A. Colson, Assistant Legal Advisor for Oceans, International Environmental and Scientific Affairs. "The United States is a leader in international conservation efforts," he said, and he called for reauthorization of the Endangered Species Act without amendments that would detract from that leadership role or from U.S. international treaty obligations. Colson stated that S.2309 is generally consistent with these criteria, but he recommended several changes. The State Department strongly supports the proposed addition to Section 4 "which: 1) provides for notification, in so far as practical, in cooperation with the Department of State, of regulations relating to listing of species of foreign nations: a) to those nations in which

"The United States is a leader in international conservation efforts," . . .

and advise whether the export or import of any Appendix II species will not be detrimental to the species' survival and whether export should be limited. The language specifically states that the Secretary "shall not be required to use estimations of population size . . . when such estimates are not the best available biological information derived from reliable wildlife management practices." In addition, the International Convention Advisory Commission (ICAC) would be abolished under the bill.

Federal Testimony

G. Ray Arnett, Assistant Secretary for Fish and Wildlife and Parks, represented the Department of the Interior at the April 19 hearing. He began his testimony by restating Interior's position that "the Act should be extended for one year with any amendments limited to modifications which would streamline the Section 7 exemption process and address problems identified by the States." After saying that S.2309 gener-

ally fits these criteria, Arnett expressed support for the subcommittee's approach and recommended some clarifying language. Among Interior's requests were that a number of points relating to the experimental population concept be more closely defined. Other recommendations were that the listing process be further clarified. One area of confusion, in particular, is how the bill's deadlines on consideration of petitioned species would affect the Fish and Wildlife Service's existing priority system. Another question was whether a species can be listed if its Critical Habitat is not determinable at the time of listing but could be determined in the future. With regard to status reviews, Arnett cited their value as a tool in making initial determinations on proposals to list species, and he recommended that they continue to be required as part of the listing process. Arnett also suggested that the scientific standard for "no detriment" findings under implementation of CITES be worded as the "best available biological information utilized in professionally accepted wildlife management practices." Interior believes that this language would be more specific, and would help avoid challenges in the courts. On the subject of funding for cooperative State endangered species programs, the Administration generally opposes this type of grant-in-aid approach. The Fish and Wildlife Service is not requesting Section 6 funds in Fiscal Year 1983. Another area of consideration was the Section 7 exemption process schedule. While endorsing the subcommittee's goal of streamlining the 360-day system, Interior suggested an alternative that would give the Secretary more time to prepare the ESC report while still reducing the entire process to 210 days. It was also recommended that the decision on whether an irreversible or irretrievable commitment of resources had been made should be retained at the threshold level.

William H. Stevenson, Deputy Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administra-

species are believed to occur or b) to those nations whose citizens harvest the species on the high seas; and 2) would invite comments from such nations." Colson further recommended retention of "the requirement that the Secretary of the Interior, in determining whether a foreign species or one found on the high seas is endangered or threatened, shall cooperate with the Secretary of State in consulting with, or taking into account the efforts, if any, of a foreign country to protect that species."

State suggested alternate language for the scientific standard in "no detriment" findings, substituting "professionally accepted" for the word "reliable." It believes that retaining the independent authority of the Secretary of the Interior to act as the U.S. Scientific Authority for CITES, while making it clear that the Secretary is not confined to any one specific method in arriving at "no detriment" determinations, is consistent with CITES obligations. Colson did suggest clarification of several technical points concerning the proposed amendment to Section 8 of the Act. Further, he again came out strongly against proposals, not included in S.2309, which would require the U.S. to automatically take a reservation to CITES if a domestic species is added to Appendices I or II notwithstanding U.S. opposition. Although the Department of State is not opposed to reservations *per se*, Colson said an automatic legislative requirement "is inappropriate and inflexible and does not further our interests from a practical perspective."

State Wildlife Agency Concerns

The testimony of the International Association of Fish and Wildlife Agencies was presented by William S. Huey, Secretary of the New Mexico Department of Natural Resources. Most of his comments on S.2309 centered on Section 8 of the Act and CITES implementation. With regard to the scientific standard for "no detriment" findings, the association believes that using the word "reliable" to modify "wildlife management practices" would introduce another element of uncertain interpretation, leading to further litigation, and clarification of this point was recommended. The Association also suggested that language be added to make the amendment retroactive to the 1981-82 fur harvest. Another recommendation was that 5-year reviews are adequate and should be substituted for the annual reviews now required. The abolition of ICAC was

endorsed, and the Association advocated an amendment on CITES implementation "to direct that the United States take a reservation in situations where the Conference of the Parties undertakes improper listings of native species."

On the subject of listing, the Association suggested clarifying the standard of information necessary at each step of the process in order to maintain the integrity of the list. Any erosion of the current requirement to determine Critical Habitat would be opposed. The experimental population concept was seen as a step in the right direction, but the Association recommends giving the Secre-

Expediting the Listing Process

Strong interest in further expediting the listing process was voiced at the tary more discretion on management levels for different species in order to accommodate local interests. One possibility Huey presented would be for the

that economic considerations are confined strictly to the Section 7 exemption process." In separate testimony, The Nature Conservancy, the National Wildlife Federation, and a number of other conservation associations also advocated further steps to help speed the listing process by making biological data the deciding factor.

Other interests also spoke for a less cumbersome listing process. The Edison Electric Institute, an association of electric utility companies, said: "We have long advocated that any decision to list or delist a species must be made expeditiously in fairness to all those whose activities will be affected directly by the decision."

CITES Implementation

The proposed amendments to Section 8 of the Act in S.2309 were of great interest to private organizations as well as government agencies. Testimony presented on behalf of the American

"A statute is remarkably successful in finding the proper balance...if it protects species without stopping projects of economic importance."

Secretary to develop a cooperative agreement with the appropriate State wildlife agency for each experimental population.

"Making use of State resources through Section 6 of the Act is good sense" according to the Association, and Huey endorsed restoration of State grant-in-aid funding and the revised cost-sharing formulas. Private organizations such as the National Wildlife Federation, Safari Club International, and The Nature Conservancy also expressed strong support for State endangered species grants.

hearings on S.2309. Michael Bean of the Environmental Defense Fund, representing more than a dozen other conservation groups, presented a detailed critique of the proposed listing amendments, and called for a revision "to require that determinations of the status of species are based strictly upon objective, biological data and to insure

Fur Resources Institute, Fur Takers of America, and National Trappers Association concurred with the earlier recommendations to remove the word "reliable" from the scientific standard for no detriment determinations, to make such determinations every 5 years, to make the amendments retroactive to the 1981-82 trapping season, and to eliminate ICAC. The Wildlife Management Institute generally shared the trappers' views on ICAC and the no detriment language, but added a recommendation for a legislative requirement to take a reservation when species not protected under the Act are placed on the CITES appendices.

Testimony presenting a different view of the Section 8 controversy, especially as it relates to bobcat exports, was presented at the hearings on behalf of the Humane Society of the United States, Defenders of Wildlife, National Parks and Conservation Association, and So-

ciety for Animal Protective Legislation. These groups maintained that the existing language in Section 8 for determinations of "no detriment" is appropriate and necessary to conserve species on the CITES appendices, and they oppose any significant change in the current standard.

Section 7 Consultations and Exemptions

Speaking with Bean for the same group of conservation organizations, Kenneth Berlin of the National Audubon Society testified that the existing Section 7 consultation system has worked exceedingly well, but that a widespread misunderstanding of the process has unfairly exaggerated its impact on development. After describing a number of specific controversial cases, he concluded that "a statute is remarkably successful in finding the proper balance between economic growth and environmental protection if it protects species without stopping projects of economic importance. Section 7 of the Endangered Species Act has succeeded in achieving this fine balance." A streamlining of the exemption process schedule was endorsed, but the substitution of an administrative law judge for the Review Board at the threshold level was recommended rather than giving this responsibility to the Secretary. In another detailed analysis of the consultation amendments, the National Wildlife Federation also supported this alternate approach, which is intended to keep political considerations out of the initial exemption process. Additionally, these groups generally opposed the amendment giving the license or permit applicant "veto power" over extensions in the consultation period.

A number of those testifying at the hearings voiced concern about the amendment in S.2309 that would exempt actions carried under a "no jeopardy" biological opinion from the taking prohibitions of the Act. While endorsing the general goal of this amendment, some felt it is unacceptably broad and would not adequately limit avoidable taking of individuals. A spokesman for the National Wildlife Federation recommended that such exemptions "should be qualified to require that the best economically and technologically practicable techniques be utilized to limit reasonably avoidable take."

Foreign Species

Safari Club International recommended that the experimental popula-

tion concept in S.2309 "be expanded to apply to foreign populations of endangered and threatened species and the efforts by foreign nations to introduce or reintroduce such species outside their current range." The group proposed a number of other amendments, including ones that would allow importation of trophies legally taken in their country of origin, delete references to sport hunting as being a factor in the overutilization of species, clarify the current language describing commercial activity, and recognize "the valuable conservation effects of sport hunting."

Two multilateral treaties are implemented by the Act, CITES and the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere. The latter treaty is designed to conserve natural areas, wildlife, and plants, and has been ratified by 17 countries. The Environmental Defense Fund called for improved U.S. implementation of this treaty, particularly with regard to plants and migratory birds.

Protection for Plants

A provision to strengthen protection under the Act for listed plants was recommended by the Natural Resources Defense Council. Citing the current lack of taking prohibitions for plants, the inadequate control over plants on Federal lands, and the growing interest of collectors in rare species, the Council requested "amendments that would prohibit collecting of listed plant species for the purpose of possessing them and require Federal land-managing agencies to regulate the collecting of plant species for which there is a large demand that threatens to cause their extinction."

Private Industry Concerns

The Western Regional Council, American Mining Conference, Edison Electric Institute, and National Forest Products Association testified at the hearings on behalf of private industry and the business community. One issue of concern was the experimental population concept. The subcommittee was urged to more closely define certain terms, and to add language further restricting habitat conservation requirements for these experimental populations, while allowing experimental techniques to be used on existing nonexperimental populations. Critical Habitat was another category recommended for further clarification. Concerning Section 7 of the Act, most of those testifying supported the ideas of giving applicants more of a

NOAA Studies Possible Humpback Whale Sanctuary

The establishment of a marine sanctuary for the humpback whale (*Megaptera novaeangliae*) in Hawaiian waters is being studied by the National Oceanic and Atmospheric Administration (NOAA) and the State of Hawaii. The proposed action was first recommended by a private researcher in 1977 and was designated as a candidate for a marine sanctuary in December 1979. Since 1979, NOAA has sponsored several series of workshops and public information meetings (the most recent workshop series being April 1982), to study the feasibility and desirability of establishing the sanctuary.

An issue paper on the proposed sanctuary, prepared by NOAA, is available to the public. Please request copies from the Sanctuary Programs Office, Office of Coastal Zone Management (NOAA), 3300 Whitehaven Street, N.W., Washington 20235 (202/634-4236) or from the Hawaii State Department, P.O. Box 2359, Honolulu, Hawaii 96804.

voice in the consultation process and of streamlining the exemption system, but argued that the amendments did not go far enough.

The Colorado River Water Conservation District, in particular, strongly recommended extensive changes in the consultation provisions of the bill, charging that its provisions have been misused by the Fish and Wildlife Service to usurp traditional State water rights. In the case of a conflict between species conservation and project development, the District would give the Federal action agency, rather than the Service, "the authority to balance the interests involved and the ultimate decisional responsibility as to whether the benefits of the proposed conflict outweigh the costs to the species."

At least two of the industry representatives advocated further expediting the listing process in order to minimize uncertainty about potential impacts on their clients' activities, but several questioned the advisability of listing subspecies, populations, or so-called lower life forms.

★ ★ ★ ★

As the BULLETIN went to press, the full committee was scheduled to report the mark-up bill to the Senate by May 15. A similar draft bill is under consideration in the U.S. House of Representatives, where committee action also was scheduled by May 15.

Opportunity for International Wildlife Conservation

by David Ferguson

Part III in a series on the endangered species activities of the Service's International Affairs Office.

The Prime Minister of India sits enthralled as a film depicting a 1-year ecological saga of India's Bharatpur sanctuary unfolds in front of her. A visiting Egyptian wildlife biologist listens intently as the Aransas National Wildlife Refuge Manager talks about endangered species management. Wildlife case histories are discussed between U.S. and Pakistani biologists at a conference in Peshawar within a few miles of the Khyber Pass. A common thread that connects all of these events is the Fish and Wildlife Service's Special Foreign Currency Program.

U.S. holdings of foreign currencies or credits accumulate through the sale of surplus agricultural commodities under the Agricultural Trade Development and Assistance Act of 1954 and through the repayment of loans. These monies, which cannot be converted into dollars or other currencies, are used to fund U.S. foreign aid programs in the host countries. A portion of the funds may be declared "excess" by the U.S. Treasury whenever the amount held is sufficient to meet all U.S. government requirements over a period of 2 years. These excess funds may then be applied to optional assistance programs.

Section 8(a) of the Endangered Species Act authorizes the Department of the Interior to utilize these foreign currencies for programs to conserve threatened and endangered species in those countries where such currencies are available. At present, the only countries eligible for the program are Burma, Guinea, India, and Pakistan.

As the primary U.S. agency with responsibility for endangered species, the Fish and Wildlife Service gained Congressional approval to utilize excess currencies starting in Fiscal Year 1976. At that time, Egypt also had excess currency status and the Service received approval for funding in Egypt, Pakistan, and India. Nearly 100 species within the three countries appear on the U.S. List of Endangered and Threatened Wildlife and Plants. Since the funds are "no-year monies" (not tied to a specific fiscal year), their use can be extended over time, which is fortunate since project negotiations can take up to 2 years and because flexibility in the use of these funds is helpful. In cases such as

that of Egypt, programs can be continued despite the unavailability of new funding.

The Service began by proposing projects devoted to the preservation of both endangered species and their ecosystems. Combined teams from the Fish and Wildlife Service and the National Park Service (which shares Endangered Species Act authorization) traveled to Egypt, India, and Pakistan in early 1977 and 1978 to contact their wildlife agencies. Cooperative programs were initiated, focusing on increasing wildlife/wildland management skills, restoration of habitats, and establishing programs for the recovery of endangered wildlife, including economically valuable species that might someday be safely harvested on a sustained-yield basis.

Activities are generally conducted at the request of the foreign country involved, and always with its full approval and participation. Activities fall into three broad categories: research, including status surveys; education, including both public awareness and professional training; and resource management. Egypt, India, and Pakistan are all different in their flora and fauna, as well as in their management methods, and while the Service's general approach to the programs in each country has been consistent, the makeup and structure of each program is quite different.

The overall program is coordinated in the Service's International Affairs Office, but the activities take place in the individual countries using local personnel. U.S. and international expertise, in the form of technical information and personnel, is drawn upon from time to time as situations merit. Universities, nongovernmental organizations, private foundations, State conservation departments, and Federal agencies other than the Service have willingly provided their expertise. Projects which could have direct benefits in the U.S. are among those sought out in the cooperating countries.

EGYPT

Many Egyptian animals, such as the Nile crocodile, cheetah, leopard, dungong, and slender-horned gazelle, have been reduced to the verge of extinction by excessive hunting, commercial overexploitation, and habitat deterioration. In addition, other species, such as the ibex, wild ass, and Barbary sheep, have come under increasing stress. Management and protection of threatened and endangered species falls under the jurisdiction of the host country's national government; however, in spite of protective legislation, management is often divided among several agencies with the result that full effectiveness is not achieved.



The leopard is one of many species protected by the U.S. Endangered Species Act of 1973 which benefit from the Service's Special Foreign Currency Program.

Courtesy of World Wildlife Fund, Inc.

Wildlife management is only a newly developed and understood concept in Egypt, and has been seldom practiced. Service efforts in Egypt initially focused on research projects to collect, collate, and assess the existing information, and to make it readily available. Subsequent activities have sought to locate and evaluate the status of the remaining populations of endangered and threatened species.

In November 1978, the Service helped sponsor an international workshop in Cairo on wildlife management in arid ecosystems. Attended by representatives from 23 countries and 9 international wildlife organizations, the conference provided recommendations to guide the Egyptian government in the conservation field for the next 2 years. Updated checklists for Egyptian wildlife were published, and field surveys discovered species thought to have been extirpated within their Egyptian range. Transfers of biological information on the Sinai have been facilitated by the Service and by private conservation organizations in the U.S. Where necessary, it was translated from Hebrew to English, with all data being provided to the government of Egypt. Implementation plans also were formulated for Israeli-established wildlife reserves in Sinai.

The cooperative program includes habitat management and protective legislation. A ministerial level conservation council was established to ensure a conservation voice in development planning within Egypt, and a proposal was developed to establish an Egyptian Wildlife Service. To help implement these measures, a joint program for multi-level training and environmental education has been established for Egyptian conservation personnel and the development of public awareness. In another significant move, Egypt ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

PAKISTAN

Attempts at establishing a joint program with the government of Pakistan have often suffered from changes in U.S. foreign policy as well as the sometimes politically unstable conditions within Pakistan. Interest by the Pakistan wildlife officials remains high, but little in the way of real activities has occurred.

Pakistan has an unusually large concentration of endangered and threatened species, including at least 25 on the U.S. list. Although a national conservation plan exists for Pakistan, the economic development and social needs of that nation have taken precedence in its national budget. Fortunately, this has not kept the National Council

for Wildlife Conservation in Pakistan (that country's primary government agency for wildlife) from continuing research on natural areas and their wildlife. Parks and reserves have been established, but some exist only on paper, awaiting funding for staff and developmental costs.

A fairly comprehensive program for research, management, and training was presented to the government of Pakistan but never formally instituted. Nevertheless, communication continues in the hope that political conditions will eventually stabilize enough to allow joint work. In the meantime, a number of exchanges have taken place in the form of personnel and technical information transfers. The Service provided support for an international survey project on the houbara bustard and is supporting educational efforts to raise awareness of both this bird and the critically endangered Siberian crane. Training continues to be emphasized.

INDIA

India has a rich heritage of wildlife, as well as a long history and tradition of conservation. The floral and faunal diversity of the Indian subcontinent is overwhelming, with estimates of 21,000 species of plants, 500 mammals, 1,300 birds, over 20,000 insects, and a wide

variety of other life forms. With an expanding human population of around 700 million, it is a tribute to the foresight of India's leaders that the government gives any support at all for wildlife conservation.

Wildlife legislation and administering agencies are in place, and there is a general public awareness and appreciation for wildlife. Systematic ecological data are not widely available, however, and protected areas are not subject to the most modern techniques for conservation and management. Unfortunately, the knowledge of population dynamics of most species is fragmentary. Many of the Indian states, where the authority for wildlife management is vested, suffer from a lack of technical expertise and trained personnel.

Next to the U.S., India probably has more species (51) on the U.S. list than any other country. The Service's joint program has sought to assist the government of India in implementing its wildlife objectives as well as to identify areas of cooperation that would benefit U.S. conservation programs.

Four major 5-year projects are currently underway to gather research on listed species and their habitats. A national survey of threatened and endangered plants incorporates management for future utilization of medicinally or economically valuable species through sustained yield, and a similar survey is



The Sariska Sanctuary in Rajasthan, India, was established to conserve this dry forest habitat.

Photo by David Ferguson

being conducted for avifauna. India contains wintering grounds for much of Asia's bird life, including a number of endangered species, the most spectacular of which may be the Siberian crane. A third major project focuses on two other endangered species: the Asian elephant and the great Indian bustard.

While new protected areas may be established as a result of this extensive activity, one major project is designed to assess the effectiveness of an existing sanctuary for the conservation of an endangered species; in this case, again, the Siberian crane. Hydrobiological studies, coupled with management improvements at Keoladeo National Park, a relatively small wetland with international significance for migratory waterfowl, will enhance wintering habitat. It is the only known wintering grounds for the western population of the Siberian crane, which numbers fewer than 50 (a second population of fewer than 250 birds winters in China). The Keoladeo sanctuary depends upon monsoon rains and runoff funneled into the area by canals. It is a haven for a variety of waterfowl, as well as several species of mammals and reptiles, and provides grazing for thousands of domestic cattle. Management of the park to provide habitat for many wildlife species often comes in conflict with human uses of the land, and this is the major problem to be resolved. The joint U.S./India project seeks to gather basic biological data about the park, assess utilization factors, and provide data to decision-makers for building a management program. The results are expected to have significant applications in the U.S.

Training of Indian personnel is a major focus of activity. Indian scientists have visited research institutions in the U.S. (as well as other countries) to exchange information, and to learn state-of-the-art techniques and applications. Biologists from the U.S. and England have visited specific sites and project areas to assist in surveys, planning, and exchanges of technical information.

Recently, the Service sponsored a major workshop on Wildlife Management and Research Techniques in India. Carried out in conjunction with the government of India's Ministry of Agriculture, the 3-week workshop provided training in 15 subject areas to over 60 participants (6 came from the neighboring countries of Bhutan, Pakistan, Nepal, Sri Lanka and Indonesia). Other cooperative exchanges of scientists and technical information have included visits of U.S. and English scientists to India to assist in activities involving environmental education, wetland ecology, fauna and flora surveys, wildlife legislation, zoo operation, reptile trade, wildlife diseases, and animal tracking and immobilization.

Significant effort has been put into helping the government of India develop a national educational plan. A pilot workshop for instructing teachers in conservation teaching techniques was successfully carried out in India with the help of the National Park Service (U.S.), and a nongovernmental Indian agency was assisted in developing a series of wildlife conservation educational packets. A 50-minute film documentary on the Keoladeo National Park was supported, and multiple copies (including six in the Hindi language) were provided to the government of India. This film has been favorably received in a number of countries outside India. Wildlife posters in several Indian languages were widely distributed to advance the conservation message, and material on critical marine habitats of the Northern Indian Ocean (Sri Lanka, India, Pakistan) has also been printed.

THE FUTURE

While Service activities in Egypt are winding down, the program in Pakistan is continuing at a steady pace, and action in India is still climbing. Service efforts in the future will attempt to

strengthen India's wildlife expertise with the expectation that it can become a regional leader in wildlife conservation. Carryover funds from previous years will allow the Service to continue its support of activities in Egypt, albeit at a low level, for the next year or so.

Based on our mandate under the Endangered Species Act, the Service has developed joint programs in Egypt, Pakistan and India with the full realization that excess foreign currencies will someday not be available. (This has already happened with Egypt). The Service has, by and large, sought out existing programs in other countries rather than creating new ones that would end once U.S. assistance is removed. We have also enlisted the cooperation of other U.S. and international wildlife organizations and institutions, upon which we rely quite heavily. A network of cooperative agencies provides insurance that international conservation work will continue. The wealth and quality of U.S. expertise is well recognized abroad, and is increasingly being sought by wildlife agencies in the "excess foreign currency" countries, reinforcing the importance of the Fish and Wildlife Service in international wildlife conservation.

CONDOR PAIR LOSES AGAIN

The pair of California condors (*Gymnogyps californianus*) that accidentally destroyed their egg in late February laid a second egg in early April, but invading ravens made this second attempt at producing a chick another failure.

Biologists with the Condor Research Center first saw the second egg on April 8, when the female rolled it out of a dark corner in the nest cave into the view of an observation post 1/2-mile away. The egg was thought to have been laid the previous day, judging from the female's behavior, in a cave about 100 yards from where the pair produced their first egg. Both sites are in a remote mountainous region northeast of Ventura, California.

On April 29, the female condor approached the nest to take its turn incubating the egg, but was chased away by the male. A raven (*Corvus corax*) quickly took advantage of the opportunity to enter the nest cave and began to peck at the egg, apparently puncturing it. The returning female condor at first tried to incubate the damaged egg, but it was soon clear that the egg was crushed. On the following day, a pair of ravens again approached the nest site and, in the ensuing fight, managed to drag away part of the eggshell.

The condor pair's first egg, laid on February 14, was lost over the edge of a cliff 12 days later as the birds fought

over which would incubate it (see March 1982 BULLETIN). They are thought to be the same pair that successfully fledged a chick 2 years ago after similar disputes.

Despite the double tragedy, there are new grounds for optimism about the future. "This is the best evidence yet that the critically Endangered California condor will renest after a nesting failure early in the breeding season," said Dr. Noel Snyder, co-leader of the center. Relaying after an early egg loss has long been known for captive Andean condors (*Vultur gryphus*), but whether it might be true for the California species had not been fully confirmed until now. This proof of natural double clutching is important to the upcoming captive breeding program for the California condor. Further weight has also been given to the belief that a captive population could be established by taking wild eggs for artificial incubation without significantly affecting the wild population. Captive reproduction of Andean condors was multiplied several times the natural rate at the Patuxent Wildlife Research Center in Maryland. Researchers hope to duplicate this success with the California species at the San Diego Wild Animal Park and the Los Angeles Zoo when free-flying immatures are captured under a permit issued recently.

New Publications

The initial section of an *Atlas of the Rare Vascular Plants of Ontario* (edited by George W. Argus and David J. White) has been produced in both English and French by the Botany Division, National Museum of Natural Sciences, Ottawa, Ontario, K1A 0M8. Copies may be obtained free-of-charge by writing the museum's Rare and Endangered Plants Project. Those who request this first part will automatically be put on a mailing list to receive subsequent parts as they are published.

Threatened and Endangered Vascular Plants of Oregon: An Illustrated Guide is now available from the Service's Portland Endangered Species Office.

CITES PLANTS REVIEWED

Continued from page 5

A review of Mexican cacti, conducted with the Mexican Cactus Society and the MDAHR has prompted the Service to propose the transfer of 47 taxa of native Mexican cacti to Appendix I. Current information suggests that all other taxa of native North American cacti should remain on Appendix II in order to prevent commercial overexploitation through international trade and to enable such trade to be monitored.

A similar review of native orchids of U.S. and Canada, conducted in conjunction with the CWS, has indicated that these taxa should remain on Appendix II. The opinion of both the Service and CWS is that none of the native North American orchids (north of Mexico) is potentially threatened with extinction as a direct result of trade. However, available information is inadequate

to support their delisting under the criteria adopted by the CITES Parties at Berne in 1976. Please consult the April 2, 1982, *Federal Register* for a complete listing of proposals.

The Service plans to publish a further notice in September 1982 announcing its decisions on these plant proposals, prior to submitting them to the CITES Secretariat for consideration at the next CITES conference, which is expected to occur around April 1983. Correspondence concerning this notice should be sent to the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (202/653-5948).

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	52	2	0	7	1	2	64
TOTAL	194	43	445	45	7	24	758

*Separate populations of species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the leopard, gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 10 animals
8 plants

Number of Critical Habitats Listed: 50

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 53

Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

May 6, 1982

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Emergency Protection Approved for Two Ash Meadows Fishes

An emergency rule listing as Endangered two fishes that occur only in Ash Meadows, Nevada, was published in the May 10 *Federal Register* and took effect immediately. The Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) and Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*) depend on maintenance of their fragile spring habitat in the Mohave Desert. A large residential and agricultural development in the area poses an imminent threat to the species' survival. Under the temporary listing, protection for the fishes and their habitats will extend for 240 days (until January 5, 1983), giving the Service time to proceed with a permanent rulemaking.

Unique and Diverse Ecosystem

Ash Meadows, an intermontane valley located about 110 kilometers northwest of Las Vegas, is a unique and diverse desert wetland ecosystem made up of several dozen springs and seeps dotting an irregular north-south contour line for approximately 16 km. During the Pleistocene Epoch, the area was covered by an extensive system of interconnecting rivers and lakes. As the climate changed and the surface waters gradually receded, the fishes and other aquatic species of the region were left stranded in the remaining springs and their associated outflows. These springs were isolated in three stages. Devil's Hole, located at the highest elevation, was isolated first, followed by a series of small middle-elevation springs. The larger, lower-elevation springs were isolated last, and it is these springs that provide habitat for the two fishes covered by the emergency rule. All of these wetlands are fed by a local aquifer consisting of "fossil water" that entered the ground-water system more than 10,000 years ago.

The organisms of the region evolved in isolated waters, adapting to their individual habitats and undergoing a high degree of speciation. Despite the dam-

age that has occurred to the fragile area in recent years, Ash Meadows is still considered a relatively lush oasis in what is now one of the most arid regions of the world (average annual rainfall 70 mm). Hundreds of plant and animal species, many of them endemic to the area, are associated with the wetlands and depend on them for survival.

Both the Ash Meadows speckled dace and Ash Meadows Amargosa pupfish are restricted to the area's larger warmwater (24° to 30°C) springs and related outflows. Unfortunately, many of the area's aquatic habitats have been degraded or lost altogether in recent years. Another Ash Meadows species, the Devils Hole pupfish (*Cyprinodon diabolis*), is endemic to a water-filled limestone cavern and was listed as Endangered in 1967. Three years later, the Warm Springs pupfish (*Cyprinodon nevadensis pectoralis*), which inhabits the small middle-elevation springs, joined it on the Endangered list. Listing the Ash Meadows Amargosa pupfish and Ash Meadows speckled

dace as Endangered therefore extends protection to all three levels of springs.

Protection did not come in time, however, for the Ash Meadows killifish (*Empetrichthys merriami*), which is now extinct. The Ash Meadows killifish was restricted to the same lower-elevation springs that contain the two emergency-listed fishes, but it was eliminated by predation from exotic species. Other members of the genus *Empetrichthys* have also been extirpated from their Nevada spring habitats. The Pahrump killifish (*Empetrichthys latos latos*), also an Endangered species, is the only surviving member of the genus. Development of Pahrump Valley, which is next to Ash Meadows, caused the failure of the only spring containing the Pahrump killifish and it now exists only in refugia.

The Ash Meadows region also has an extraordinarily diverse freshwater mollusk fauna, which is currently being studied by Dr. Dwight Taylor of Tiburon, California. Of special interest are two species complexes of snails which are

Continued on page 3

House and Senate Pass Reauthorization Bills

Two bills which further amend and reauthorize the Endangered Species Act of 1973 were passed by the U.S. House of Representatives and the U.S. Senate on June 8 and 9, 1982, respectively. H.R. 6133 and S.2309 will next go to a Congressional Joint Committee for resolution of differences.

Both bills contain amendments to:

- speed up the listing process,
- allow for "experimental populations;"
- provide for more involvement of permit and license applicants in the consultation process;

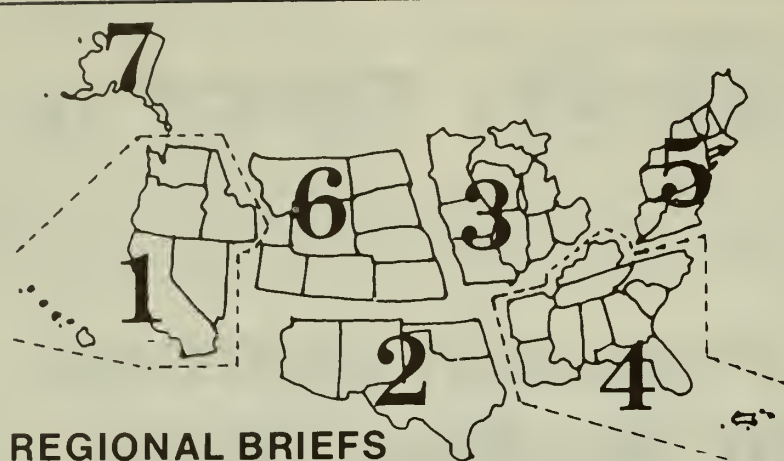
- streamline the exemption process;
- establish new criteria for export of Appendix II species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora; and
- reauthorize the Act for 3 years.

A complete analysis of the final 1982 Amendments of the Endangered Species Act will be given in a future issue of the BULLETIN. For background information on the amendments listed above, consult the January, March, and May 1982 issues of the BULLETIN.

GOVT. DOCUMENTS
DEPOSITORY ITEM

AUG 18 1982

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REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of May:

Region 1—The California condor (*Gymnogyps californianus*) is in the news again. After witnessing the loss of two eggs this season from one breeding pair, biologists with the Condor Research Center have confirmed the presence of a chick produced by a second

pair, and are optimistic about nesting behavior exhibited by a third pair some 45 miles away that indicates the possible existence of another chick. The nest of the third pair is in a cave and cannot be seen well from the observation post, but the biologists hope to be able to confirm the possible chick in the future.

The Service has published a notice of intent to prepare an Environmental Assessment on the San Bruno Mountain

Habitat Conservation Plan and Endangered Species Section 10(a) Permit, San Mateo County, California (F.R. 4/6/82). The proposed Federal permit would be for taking of Endangered mission blue butterflies (*Plebejus incaridoes missionensis*) incidental to implementation of a conservation plan, which includes construction of residential housing on San Bruno Mountain. The habitat conservation plan is incorporating various commitments from private landowners, local governments, and the Federal Government. It is designed to conserve and enhance as much of the remaining habitat as possible for the mission blue and other species of concern in the area, while allowing limited development that would not have significant adverse effects on the species. Key elements of the plan will set aside habitat favored by the butterfly, foster the growth of the butterfly's host plants, reverse the invasion of competing brush species, alter the initial construction plans, and establish research/monitoring programs.

On April 26th, the Fish and Wildlife Service and University of California-Berkeley botanists and pedologists (soil scientists) inspected the China Hat formation north of Merced in Merced County. This formation contains some of the oldest soils in California, nearly 3 million years in age. Moreover, China Hat has a multitude of mima mounds and vernal pools; the latter are seasonally wet depressions that harbor a unique flora. Approximately 15 pools contained succulent owl's clover (*Orthocarpus campestris* var. *succulentus*), a Federal candidate for listing and a State-listed endangered plant species. This discovery significantly increased the known range of the plant. U.C.-Berkeley researchers are attempting to preserve a portion of this unique area.

Region 2—For the second time in 2 years, the captive female Mexican wolf (*Canis lupus baileyi*) at the Wild Canid Survival and Research Center at St. Louis, Missouri, has produced a litter of pups. This year's litter includes 2 females, bringing the total number of Mexican wolves in captivity to 12, half of which are females.

The red wolf (*Canis rufus*) captive breeding program has produced three more litters of pups this year, bringing the total number in captivity to 56.

Region 4—The Florida Game and Fresh Water Fish Commission, in cosponsorship with the U.S. Forest Service, Gulf Coast Community College, and the U.S. Fish and Wildlife Service, will host a red-cockaded woodpecker (*Picoides* [= *Denrocoptes*] *borealis*) symposium, January 27-29, 1983, in Panama City, Florida. Those

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REGIONAL BRIEFS

Continued from page 2

interested in attending or participating should contact Don Wood, Division of Wildlife, Florida Game and Fresh Water Fish Commission, 620 South Meridian Street, Tallahassee, Florida 32301 (telephone 904/488-3831).

Bald eagles (*Haliaeetus leucocephalus*) have nested for the first time in over 30 years in Arkansas. The nest is located on the White River National Wildlife Refuge; the pair of eagles using this nest laid two eggs and both have hatched, although only one hatchling has survived as of May 26.

One of the Florida panthers (*Felis concolor coryi*), radio collared in February 1982 has been found dead. Daily aerial monitoring since the date of capture indicated that the animal had been stationary since early April. A ground search was made, and on April 16 the remains of the male panther were found with the radio collar. The cause of death has not been determined. The skeletal remains have been deposited at the Florida State Museum, University of Florida, at Gainesville. This is the first radio collared panther that has died. It was estimated to have been about 7 years old and was known to be alive as recently as late March.

Region 5—On May 19, the Director approved the Chesapeake Bay Bald Eagle Recovery Plan, commending the recovery team, headed by Gary Taylor of the Maryland Department of Natural Resources, and the regional endangered species staff on the accomplishment. The plan is the first approved of five regional recovery plans being developed

on bald eagles in the lower 48 States.

New York State's endangered species unit plans to return to Alaska in July to obtain 21 more bald eagle chicks. All 21 collected last year and taken to the hacking site at Oak Orchard, New York, fledged successfully.

Region 6—In October 1981, during fall migration, a group of four whooping cranes (*Grus americana*) were observed at Quivira National Wildlife Refuge in central Kansas. One week later, after the group of four had migrated further south, the refuge was visited by a group of six whoopers. These 10 birds represent 13 percent of the population of 79 birds that started the migration south from the breeding grounds in Wood Buffalo National Park, Northwest Territories, Canada, to the wintering grounds along the coast of southern Texas. Because of past use of whooping cranes, the refuge was designated as Critical Habitat on May 15, 1978.

The March 1982 BULLETIN reported on the recovery plan that was approved for the grizzly bear (*Ursus arctos horribilis*). The plan has been printed, and copies are available from the Denver Regional Office or the Billings Area Office.

The May 1979 BULLETIN related that the Bureau of Reclamation (BR) and the Service had agreed to a study of the endangered Colorado squawfish (*Ptychocheilus lucius*) and humpback chub (*Gila cypha*). Later, the August 1981 issue reported that additional studies were being conducted and that the bonytail chub (*Gila elegans*) was also being studied. The Colorado River Fishery Project (CRFP) completed field studies in the fall of 1981, and is

completing a final report. Although significant information on the life history requirements of the species was collected, certain conclusions and recommendations made in the report are preliminary and warrant further refinement or verification. In order to obtain the additional information that is needed, BR and the Service have entered into a Memorandum of Understanding to carry out a Colorado River Fishery Monitoring Program (CRFMP) until March 31, 1985. The three objectives of the CRFMP are (1) to expand information on the distribution and movement of adult squawfish to and from spawning site locations with the use of radio-tagging, (2) to verify flow requirements of adult squawfish in relation to spawning success and survival of larval squawfish, and (3) to determine effects of flow fluctuation at Flaming Gorge Reservoir on the survival and rearing of young-of-the-year and juvenile squawfish. Dr. Bill Miller, the Service biologist at Salt Lake City, Utah, who was project leader for CRFP, will also head the CRFMP.

Intensive night spotlight surveys conducted in the Meeteetse, Wyoming, area last November by the Service resulted in at least nine different black-footed ferrets (*Mustela nigripes*) being sighted. Extensive snow tracking efforts this past winter by Idaho State University/Biota Research and Consulting, Inc., biologists resulted in evidence that indicated there may be 11 or more additional individuals in the area. Work will continue on the ferrets this summer, and probably next winter, to determine the number of individuals and their distribution.

Recovery Plans Approved for Clay Phacelia and Eastern Indigo Snake

The Director of the Service has approved two additional plans to aid in species recovery: the Clay Phacelia (*Phacelia argillacea*) Recovery Plan, signed April 12, 1982, and the Eastern Indigo Snake Recovery Plan, signed April 22, 1982.

Clay Phacelia

The clay phacelia (*Phacelia argillacea*) is a winter annual whose known current distribution consists of one small population of about 200 plants along a railroad right-of-way in Utah County, Utah. It was first collected in 1883, but there was little knowledge of the species until its rediscovery by N.D. Atwood in 1971. The plant was described and named as a new species by Atwood in 1973, and was listed by the Service as Endangered in 1978.

Destruction of portions of the *P. argillacea* population and modification of habitat within its very restricted distri-

bution have jeopardized the species. Both the railroad and its maintenance road bisect the only known *P. argillacea* population, and most of the plants are situated on privately owned land which could be further modified in the future. Sheep have moved through the population area, trampling some of the plants, and rock squirrels have chewed branches on some of the remaining individuals.

The objective of the recovery plan is to establish a self-sustaining population of 2,000–3,000 individuals on 120 acres of protected habitat, and possibly to establish at least one additional population. An initial recovery phase will be to give the existing population more direct protection; this may be accomplished through better control of animal damage and through acquisition of a portion of the habitat by a private conservation organization, The Nature Conservancy. Liaison with the railroad company and

the Utah Department of Transportation, both of which manage parts of the site, will encourage each to assist in conserving the habitat.

Since *P. argillacea* historically was known from two locations, an intensive survey of similar habitat in the region is recommended to locate any additional existing populations. The plants and their habitat are to be monitored periodically to insure adequate conservation. Another part of the plan outlines studies needed on the species' biology and habitat requirements. Careful harvest of a small portion of the annual seed production could enable experimentation on germination, substrate needs, and survival techniques. Long-term storage of seeds at the USDA-National Seed Storage Laboratory in Fort Collins, Colorado, is mentioned in the plan as a possibility to preserve the plant's gene-pool.

Continued on page 6

destroyed many plant and animal populations, along with their wetland habitat, by altering the land surface and lowering the water table. In 1976, a series of negotiations and court cases culminated in a landmark U.S. Supreme Court decision limiting the amount of groundwater pumping in the Devil's Hole area of Ash Meadows to protect vital water levels in the only known habitat of the Devils Hole pupfish. The Supreme Court saved the habitat of the Devils Hole pupfish by recognizing the prior water right of the 40-acre disjunct portion of Death Valley National Monument surrounding Devil's Hole. The court decision was not based on endangered species protection, but instead on water rights. Although the Ash Meadows wetlands are interconnected by the same aquifer that feeds Devil's Hole, the effects of groundwater pumping on the water table vary according to location; therefore, the 1976 Supreme Court decision did not necessarily preclude pumping in other areas of Ash Meadows.

In 1977, the agricultural interest sold approximately 14,000 acres of land in Ash Meadows to a real estate developer, Preferred Equities Corporation (PEC). The imminent threat to the existence of the Ash Meadows species is the proposed development of the area by PEC for residential, recreational, industrial, and agricultural purposes, all of which would require great quantities of water. Although the Bureau of Land Management is the principal landowner in the 40,000-acre Ash Meadows area, PEC owns the majority of surface water rights. A recent report prepared for the Attorney General of Nevada (*The Status and Future of Ash Meadows, Nye County, Nevada*; Sid F. Cook and Cynthia D. Williams, 1982) estimates that 368.4 percent of the total discharge water available in Ash Meadows would be necessary if the development was completed.

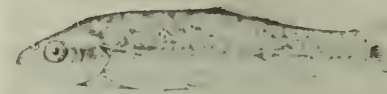
Construction activities in Ash Meadows would clear large tracts of essential habitat, extirpate many plant and animal populations, and alter surface drainage patterns. Utilization of surface water from springs, along with pumping the aquifer, would eliminate most surface flows, lower the water table, and interfere with the very slow groundwater recharge, all of which would destroy downgradient wetlands. The initial development phase has already begun, and some habitat has been modified. PEC has constructed roads in the area, several of which connect different springs, and it has substantially altered surface flows and spring hole morphometry at these sites. Several springs have been excavated by heavy equipment. (PEC has applied for permission from the State of Nevada to divert water from many of the other Ash Meadows springs.) In addition, approximately 1,000 acres of cotton have been planted. These events complement the destruction of habitat which has occurred since the advent of agricultural activities at Ash Meadows.

Habitat loss is not the only factor jeopardizing the Ash Meadows endemic species. As is the case with many other "island" ecosystems, the introduction of exotic organisms has had a serious impact. Competition from the mosquito fish (*Gambusia affinis*) and sailfin molly (*Poecilia latipinna*), as well as predation by bullfrogs (*Rana catesbiana*) and crayfish (*Procambarus clarkii*), were at least partially responsible for the extinction of the Ash Meadows killifish, and continue to threaten the Warm Springs pupfish, Ash Meadows Amargosa pupfish, and Ash Meadows speckled dace. An introduced aquatic snail (*Melanoides*) has reduced populations of native snails in several springs. The introduced species may also be having an impact on other aquatic endemics in the area.



Subspecies of the Amargosa pupfish (above) and speckled dace (below), occurring only in a few Ash Meadows springs, were listed in the emergency rule.

Illustrations by Carol Mortensen



Effects of the Rule

In its emergency rule, the Service determined that "development of the Ash Meadows residential community will cause the extirpation of the Ash Meadows biological community." To help forestall further damage, the listing of the Ash Meadows Amargosa pupfish and the Ash Meadows speckled dace became effective immediately upon the date of the *Federal Register* publication, May 10, 1982. This action gives protection to the habitat most immediately jeopardized by development, and is expected to help conserve other endemic species in the area.

A formal designation of Critical Habitat for the fishes was not included in the emergency rule because vandalism of the restricted and very vulnerable habitats could occur if detailed maps of the springs were published. The emergency rule carries the full protection of the Endangered Species Act, including the prohibition of "taking" and of adverse habitat modification by Federal agencies. During the 240-day course of the temporary listing, the Service will prepare a proposal to extend permanent protective status to the two fishes, and Critical Habitat might be included at that time if it is shown to be beneficial to the species' survival. The condition of the other Ash Meadows endemic species also will be evaluated to determine the need for including them in the proposal for a final rule.

NOTE

Since June 1981, free distribution of the BULLETIN has been limited to Federal employees only. This note is to assure you that the Service intends to continue free distribution to all who are now receiving the BULLETIN, and to any Federal employee who might wish to receive it in the future.



Blue Pike and Longjaw Cisco Proposed for Deregulation

The Service has proposed to remove the blue pike (*Stizostedion vitreum laucum*) and the longjaw cisco (*Coregonus alpenae*) from the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 5/25/82). Available data indicate that both species are extinct.

Historically, the blue pike was found in Lakes Erie and Ontario, and the Niagara River. They were abundant in the commercial fishery of the late 1800's but by 1915 landings began to fluctuate extensively. Populations declined in the late 1950's and never recovered, the last confirmed specimens being taken in the late 1960's.

In a 1977 survey, the Blue Pike Re-

covery Team contacted all State fish and game agencies in an effort to determine the species' status. After all parties responded negatively regarding the pike's presence in their State, the team concluded that the fish was extinct and recommended its deregulation. Over-intensive fishery, which disrupted self-stabilizing mechanisms within the blue pike's population, is probably the cause of the extreme fluctuations and ultimate crash of the fishery. Deterioration of water quality during the late 1950's and early 1960's contributed to the decline of the species.

The longjaw cisco was indigenous to the Great Lakes basin and occurred only in Lakes Michigan, Huron, and

Erie. It was one of several species of deepwater ciscos utilized by the smoked fish trade and was a very important species of the fishery of the Great Lakes. This fish has not been seen in Lakes Erie and Huron since the late 1950's. The most recent collection of this species was in 1967 in Lake Michigan. The decline of the longjaw cisco and the cisco fishery in general is usually attributed to fishery and environmental problems.

Comments and materials concerning this proposal should be sent by July 26, 1982, to the Regional Director, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111.

ASH MEADOWS

Continued from page 1

found within a 5-mile radius in Ash Meadows, and contribute to the area containing the highest concentration of endemic animal species in the continental United States. Most of these mollusks have not been scientifically described and named. The same factors that jeopardized the desert fishes, primarily groundwater pumping and the introduction of exotic species, led the Service in 1976 to propose the Ash Meadows turban snail (*Fluminicola erythropoma*) as Threatened. In 1979, the proposal was withdrawn because of the listing schedule deadlines specified in the 1978 Amendments to the Endangered Species Act. Current evidence indicates that *F. erythropoma*, as proposed, comprised more than one species. The Service is now evaluating the status of at least 12 Ash Meadows snail species, and expects to include them in a general Notice of Review on animals which will be published in the *Federal Register* later this year.

Another Ash Meadows endemic that may appear on the same Notice of Review is the Point of Rocks Spring naucorid (*Ambrysus amargosus*); unfortunately, this insect may already be extinct because of the diversion of water from its single spring habitat. The Ash Meadows riffle beetle (*Stenelmis calidae calidae*) also is restricted to only one aquatic habitat, Devil's Hole, but it benefits from the habitat protection given to the Devils Hole pupfish.

Seven plant species endemic to Ash Meadows are considered candidates for future listing, and were included in the general Notice of Review on plants published in the December 15, 1980, *Fed-*

eral Register. These species are the spring-loving centaury (*Centaurium namophilum* var. *namophilum*), Amargosa niterwort (*Nitrophila mohavensis*), Ash Meadows gum plant (*Grindelia fraxinopratensis*), Ash Meadows stickleaf (*Mentzelia leucophylla*), Ash Meadows milk-vetch (*Astragalus phoenix*), King ivesia (*Ivesia eremica*), and Corrugated sunray (*Enceliopsis nudicaulis* var. *corrugatum*). Two other candidate plants included in the Notice of Review occur in Ash Meadows and elsewhere; these species are the Tecopa bird's-beak (*Cordylanthus tecopensis*) and the alkali mariposa lily (*Calochortus striatus*). The *Astragalus* and *Mentzelia* are currently listed by the State of Nevada as threatened with extinction.

One small endemic mammal once found in the area, the Ash Meadows

vole (*Microtus montanus nevadensis*), has not been reported in over 20 years and is probably extinct because of habitat disturbance. In 1980, the Service published a separate Notice of Review on a related mammal, the Amargosa vole (*Microtus californicus scirpensis*). This candidate for listing is thought to inhabit the general region just southwest of Ash Meadows.

Threats to the Habitat

Although early attempts at agriculture in Ash Meadows failed because of the area's salty, clay soils, there was renewed interest in the late 1960's and early 1970's. Large tracts of land were plowed, and groundwater pumps and diversion ditches were installed to support an agricultural operation. This activity

A view of Point of Rocks Springs, Ash Meadows, before (below) and after (right) development. The pool and its outflow once were habitat for both of the recently listed fishes.



Photos by D. W. Sada

RECOVERY PLANS

Continued from page 5

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) historically occurred throughout the southeastern United States coastal plain, from South Carolina to Florida and west to southern Louisiana. After habitat loss and overcollection for the pet trade, however, only southeastern Georgia and peninsular Florida are thought to support sizeable populations. Both States give the snake full protection, and it was listed by the Service in 1978 as a Threatened species.

One of the major recommendations of the recovery plan is to conduct additional field studies to locate eastern indigo populations and delineate their habitat. In Georgia, the snake is strongly associated with xeric sandridge habitat, and depends on gopher tortoise (*Gopherus polyphemus*) burrows for refuge and overwintering sites. Once suitable habitat is located, the plan calls for acquisition and/or management of areas necessary to maintain viable populations. Additional legal protection on the State level for both the eastern indigo snake and the gopher tortoise is advocated.

Captive propagation and monitored reintroduction efforts are another important part of the plan. The Alabama Cooperative Wildlife Research Unit is already in the fourth year of an eastern indigo propagation/restocking program. (For details regarding the unit's activities on the eastern indigo, see the November 1981 BULLETIN.)

* * *

Copies of recovery plans are available from the Fish and Wildlife Reference Service, Unit i, 3840 York Street, Denver, Colorado 80205.

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	52	2	0	7	1	2	64
TOTAL	194	43	445	45	7	24	758

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 10 animals
8 plants

Number of Critical Habitats listed: 50

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 54

Number of Cooperative Agreements signed with States:

38 fish & wildlife

11 plants

May 31, 1982

New Publications

"Rare Plants of New York State," by Richard S. Mitchell and Charles T. Sheviak, 1981, is available for \$8.00. This New York State Museum publication (Bull. 445) has 96 pages and 55 illustrations. To order, make your check payable to New York State Library and mail to Gift and Exchange Department, New York State Library, Albany, New York 12230.

A cumulative index of the *Endangered Species Technical Bulletin* (July 1976–December 1981) is now available. Copies may be requested by writing the Office of Endangered Species, U.S. Fish and Wildlife Service, 18th and C Streets, N.W., Washington, D.C. 20240.

"International Trade in Plants—Focus on U.S. Exports and Imports," by Thomas Gibson, Niall McCarten, Faint Thompson Campbell, and Linda McMahon is now available from Traffic (U.S.A.) for \$9.50. Order a copy by sending a check (payable to World Wildlife Fund-U.S.) to Traffic (U.S.A.), 1601 Connecticut Avenue, N.W., Washington, D.C. 20009.

"Amphibians and Reptiles in Pennsylvania Checklist, Bibliography, and Atlas of Distribution," by C.J. McCoy, March 1982, is available for \$4.00. This Special Publication of Carnegie Museum of Natural History (No. 6) has 91 pages and 74 maps. Order copies from the Carnegie Museum of Natural History, 4400 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

June 1982

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ENDANGERED SPECIES

Technical Bulletin

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ENDANGERED SPECIES

Technical Bulletin

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GOVT. DOCUMENTS
DELIVERY ITEM

Bald Eagle Bicentennial Year Highlighted by Chesapeake Plan

by Roger Hogan, Region 5

The first of five regional recovery plans designed to help reestablish bald eagle (*Haliaeetus leucocephalus*) populations in the United States was signed on May 19, 1982, by the Service's Director Robert A. Jantzen. This plan, the Chesapeake Bay Bald Eagle Recovery Plan, was prepared by the Chesapeake Bay Bald Eagle Recovery Team which is headed by Gary J. Taylor, Nongame and Endangered Species Program Manager for the Maryland Wildlife Administration.

In recognition of Taylor's leadership which was key to the plan's completion, a Letter of Commendation from Director Jantzen was recently presented to him by Regional Director Howard Larsen. During the presentation, Larsen expressed his confidence in the success of recovery efforts for the bald eagle and noted the appropriateness of the Recovery Plan's completion during 1982, recently designated as "Bicentennial Year of the American Bald Eagle" by President Ronald Reagan. The letter also acknowledged Taylor's involvement in the organization and direction of projects for the benefit of Federal and State endangered species in the Chesapeake Bay Area.

Status of Chesapeake Bay Eagles

The Chesapeake Bay Region encompasses the entire state of Delaware and the coastal plain of Maryland and Virginia. In 1936, approximately 25 percent of this area was surveyed resulting in an estimate for that portion of the region of 150 to 200 nesting pairs of eagles. Estimates from a 1962 aerial survey indicated that only 150 pairs of bald eagles remained in the entire Chesapeake region and that the level of production of young by these birds was only one-eighth of that found in 1936. By 1970, the nesting population of bald eagles appeared to have been reduced to 80-90 pairs. The decline in the eagle population has been attributed largely to high levels of pesticides DDE, Dieldrin and also possibly PCB's. Recent data (1982) show an improvement in the number of active nests with 106 counted, and also an increase in productivity. The gradual decline in levels of pesticides in the eagles is beginning to be manifested.

Other problems still exist in the form of other environmental contaminants, accelerating rates of habitat destruction, disturbance, and shooting. The Chesapeake Bay Bald Eagle Recovery Plan sets forth various tasks designated to

minimize these impacts on eagles. These tasks range from population and habitat surveys and obtaining cooperative agreements with landowners, to developing public information programs.

Working closely with the Recovery Team and the Service in the accomplishment of the recovery tasks are the States of Maryland, Virginia, and Delaware and the Audubon Naturalist Society, National Wildlife Federation, and The Nature Conservancy. The ultimate goal of the plan is the delisting of the eagle; a more immediate goal is to reclassify its status from Endangered to Threatened. The Recovery Team feels that, based on available habitat in the Chesapeake Bay Region, this reclassification can be accomplished when the eagle has reached a population size of 175-250 nesting pairs with a minimal productivity of 1.1 eaglets per active nest.

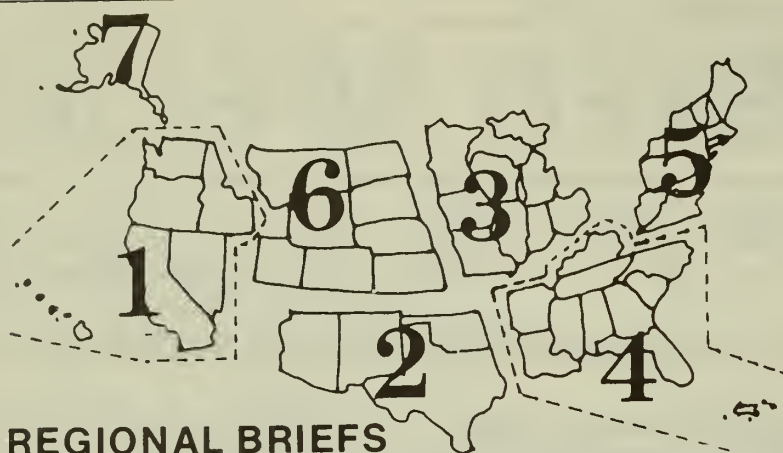
Further information on this plan can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Suite 700, One Gateway Center, Newton Corner, Massachusetts 02158 (617/965-5100). Copies of the plan are available from the Fish and Wildlife Reference Service, Unit i, 3840 York Street, Denver, Colorado 80250.

Mid-July Set for Joint Committee Meet

A Congressional Joint Committee, formed of members of both the U.S. House of Representatives and the U.S. Senate and their staffs, is scheduled to convene in mid-July. The joint committee will reconcile differences which exist between H.R. 6133 and S.2309, bills passed by the respective lawmaking bodies in early June 1982 for reauthorizing and further amending the Endangered Species Act. A complete analysis of the final 1982 Amendments of the Act will be given in a future issue of the BULLETIN.



Recent data show an increased number of bald eagle nests as well as increased nest productivity in the Chesapeake Bay area.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of June:

Region 1—In cooperation with the Oregon Department of Fish and Wildlife and the U.S. Forest Service, aerial surveys were conducted for active peregrine falcon (*Falco peregrinus*) eyries in Oregon. Most of the likely nesting sites were surveyed this year; the re-

maining areas will be done early next spring. Preliminary results indicate the possibility of two new active eyries. Only one active site is currently known.

The only currently known location of a candidate plant, palmate bird's beak (*Cordylanthus palmatus*), has been plowed by the landowner, indicating that conservation efforts to protect the site have failed. *C. palmatus* was thought to be extinct until recently rediscovered.

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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The full impact that the plowing will have on this species is not yet known.

Over 13,000 cui-ui (*Chastmistes cujus*) have used the Pyramid Lake fishway at the Marble Bluff Dam on the Truckee River to gain access to upstream spawning areas. This is the largest run of this Endangered fish ever to enter the facility. The previous high was 7,100 in 1980. Fewer than a hundred entered the system last year. The success and magnitude of this year's run is due to high river inflows in Pyramid Lake and a new modified fish ladder in the Pyramid Lake fishway.

Region 2—The Endangered Gila topminnow (*Poeciliopsis occidentalis*) was stocked in over 70 springs and tanks on U.S. Forest Service lands during June. This action is part of a Memorandum of Understanding (MOU) with the Arizona Game and Fish Department, the Forest Service, and the Fish and Wildlife Service that potentially will lead to downlisting of the fish within 3 years and delisting within 5 years. It is believed to be the most extensive single reintroduction effort ever undertaken for a listed species, and estimates are that 250 people from the MOU cooperators participated in the recovery action.

The Arizona breeding population of the bald eagle (*Haliaeetus leucocephalus*) has fledged a near record 13 young from 7 nests. Three of these chicks were fostered at two nests, and all fledged successfully. To the east, bald eagles in Texas fledged 16 young from 14 nests.

About 2,000 Kemp's Ridley sea turtle (*Lepidochelys kempii*) eggs have been brought from the turtle's only known nesting beach (at Tamaulipas, Mexico) to the Padre Island National Seashore in Texas for incubation and imprinting. Following the hatchlings' imprinting on Padre Island beaches, they will be taken to the National Marine Fisheries Service laboratory at Galveston for "head-starting" prior to their eventual release.

Region 5—The Massachusetts bald eagle hacking program got off to a great start thanks to the State of Michigan, which donated two eagle chicks; the Massachusetts Audubon Society, which provided \$10,000; and the Massachusetts Division of Fisheries and Wildlife, which planned, coordinated, and is carrying out the project at Quabbin Reservoir. Region 3 of the Service was also thanked for its support of the cooperative venture.

The Forest Service has submitted a technical review draft of the Robbins Cinquefoil (*Potentilla robbinsiana*) Recovery Plan to the Regional Office. Another cooperative effort, the plan was prepared by the staff of the White Mountains National Forest (New Hamp-

Continued on Page 4

Hawksbill Nesting Beaches Determined Critical Habitat

Important nesting beaches for the hawksbill sea turtle (*Eretmochelys imbricata*) in the Commonwealth of Puerto Rico have been determined Critical Habitat (F.R. 6/24/82). This action identifies specific areas subject to Federal agency consultation under Section 7 of the Endangered Species Act. Hawksbill populations throughout the tropics are jeopardized primarily by trade in turtle shells and products; taking of turtle eggs for human consumption and by predators; and disruption or alteration of nesting beaches. The maintenance and protection of undisturbed nesting beaches is necessary for the survival of hawksbills and other sea turtles, and this strategy was endorsed by the 1979 World Conference on Sea Turtle Conservation.

The hawksbill sea turtle was listed as Endangered in 1970. Since 1977, responsibility for the conservation of all listed sea turtles has been shared by the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS). The FWS has jurisdiction while they are on land; therefore, this determination applies only to nesting beach habitat. Included are all 7.2 kilometers of beaches on Isla Mona, along with sections of beachfront on Culebra Island, Isla Culebrita, and Cayo Norte, which are reported to be among the best in the world for the hawksbill. Some of these areas may also be used by other listed sea turtles, including the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*).

Regulatory History

Critical Habitat protection for hawksbill nesting beaches in the Commonwealth of Puerto Rico was first proposed on May 24, 1978, but was withdrawn March 6, 1979, because of changes in the requirements for determining Critical Habitat made by the 1978 Amendments to the Endangered Species Act. After complying with the new procedures, the rule was repropo-
posed on October 22, 1980, and three public meetings were held in the area during the following December. Of the 25 comments received in response to the reproposal, 24 were in favor and one took no position. The area finally determined as Critical Habitat is essentially the same as that specified in the proposals.

Effects of the Rule

A Critical Habitat determination complements the protection already given a species at the time of its listing. It does not establish a refuge or wilderness area, but only assists Federal agencies in complying with their responsibilities under Section 7 of the Endangered Species Act. Specifically, Federal agencies are required to insure that any actions they fund, authorize, or carry out will not likely jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of its Critical Habitat. Maps and descriptions of the areas covered by the rule can be found in the June 24, 1982, *Federal Register*.

Smoky Madtom Status Review

The smoky madtom (*Noturus baileyi*), which was believed extinct until September 1980 when it was discovered by a Service survey crew in Citico Creek, Monroe County, Tennessee, is the subject of a status review (F.R. 6/22/82). This study will help to determine if the species and its habitat should be provided protection under the Endangered Species Act of 1973, as amended.

Citico Creek, a tributary of the Little Tennessee River, is presently the only known habitat of the smoky madtom. The fish was originally discovered by a Service crew in 1957 in Abrams Creek, another tributary of the Little Tennessee River in nearby Blount County. The discovery of the species and collection of the type specimens occurred during a "stream renovation" poisoning operation to remove unwanted fish species from the Chilhowee Reservoir watershed prior to closure of the Chilhowee Dam. (This was a routine procedure at that time designed to enhance the chances of establishing a trout fishery in a new reservoir.) Soon thereafter the Abrams Creek locality where the madtom was first discovered was flooded by the closure of Chilhowee Dam. Despite considerable efforts, no further specimens have been collected from Abrams Creek.

The biology of the madtom is poorly known. However, the fish are probably nocturnal and likely to feed on aquatic insects. Due to its apparent limited distribution, the fish is very vulnerable to a single catastrophic event which could completely eliminate the species. The fish's habitat could also be adversely modified by logging, road construction, or other disturbance within the Citico Creek watershed if these activities are not carefully designed and carried out with the welfare of the species in mind.

In addition to biological data, the Service is seeking information on environmental and economic impacts and effects on small entities that would result from listing the species as Endangered or Threatened under the Act. The Service also seeks information on possible alternatives to the listing.

Comments and data should be submitted to the Area Manager, U.S. Fish and Wildlife Service, 50 South French Broad Avenue, Plateau Building, Room A-5, Asheville, North Carolina 28801. For further information on the notice of review, write Mr. Richard Biggins or Mr. Robert Currie at the same address, or call (Commercial 704/258-2850, Extension 321; FTS 8/672-0321).



Pictured above is Isla Mona, Puerto Rico, part of the recently determined hawksbill sea turtle Critical Habitat.

Return of Wolf Management to Minnesota Proposed

The return of management authority for the gray wolf (*Canis lupus*) in Minnesota to the State is included in new regulations recently proposed by the Service (F.R. 7/14/82). Among the provisions of the Minnesota management plan are increased flexibility in predator control and a limited trapping program.

The gray wolf once ranged through most of North America, but habitat loss and conflict with agricultural uses caused the extirpation of the species in most of the lower 48 States; the few remaining wolves in this region were later listed as Endangered. Today, the wolves in northern Minnesota compose the last large surviving population south of Canada. It was reclassified to

"Threatened" in 1978. Current estimates are that it numbers 1,200–1,400 animals. A recovery plan for the eastern timber wolf, the subspecies of which the Minnesota wolves are a part, also was approved in 1978.

Although the reclassification to Threatened did allow for greater management flexibility with regard to predator control, problems continued in agricultural areas. Currently, the Service is restricted to trapping depredating wolves within one-quarter mile from where the incident occurred; the proposed regulations would extend the limit to one-half mile. Also, additional limited trapping would be allowed in certain areas, a measure which was recom-

mended in 1978 by the recovery team. Restrictions would be imposed to maintain specified wolf population densities.

Under the proposed regulatory changes, the Minnesota wolves would continue to receive protection as Threatened under the Endangered Species Act, and all other gray wolves in the lower 48 States would remain Endangered. The species is still relatively secure in Canada and Alaska, where it is not listed.

The wolf proposal was prepared in the Service's Twin Cities Regional Office, and comments should be addressed to the Twin Cities Regional Director. Public meetings will be held in Minnesota at the Twin Cities Federal Building at 10:00 am on August 4 and at the Rainy River Community College in International Falls at 7:00 pm on August 11, 1982. Comments are due by 9/13/82.

REGIONAL BRIEFS

Continued from Page 2

shire), with assistance from an advisory group of local conservation organizations, university personnel, and private citizens.

The Reynolds Research Center in Critz, Virginia, has provided emergency assistance in the Virginia roundleaf birch (*Betula uber*) recovery effort. The Center's facilities and technical expertise are being used to propagate about 10,000 seedlings which will be used to augment the wild population, which now has declined to only 15 individuals. (For more on the *B. uber* recovery effort, see the April 1982 BULLETIN.)

Region 6—The final report on the Yampa River Fishes Study was submitted to the National Park Service by the Colorado River Fisheries Study Team. Eight adult Colorado squawfish (*Ptychocheilus lucius*) implanted with radio-transmitters migrated in early July to spawning areas. This spawning migration had been postulated but never documented. The total distance moved by these fish during June and July ranged from 55 to 219 miles. Collections of young-of-the-year fish indicate a drift behavior whereby larvae drift downriver and away from the spawning site to more favorable quiet backwater habitats. Identification and protection of larval nursery areas and long distance spawning migrations of adult Colorado squawfish may be the most significant factors for preservation of this Endangered fish.

A few humpback chubs (*Gila cypha*) were collected, but no bonytail chubs (*Gila elegans*) were found, although they formerly occurred in the study area. A few razorback suckers (*Xyrauchen texanus*) were collected in spawning condition. Though spawning

activities probably occurred, success of such attempts is doubtful since no young or juvenile razorback suckers were collected in 3 years of intensive sampling.

Since the fall of 1975, the Service has monitored the spring and fall migration of whooping cranes (*Grus americana*) between Wood Buffalo National Park and Aransas National Wildlife Refuge. A recent summary of these sightings by the Service's Pierre Area Office shows that 775 sightings have been reported. Using criteria developed by the Whooping Crane Recovery Team, 351 sightings were classified as "confirmed," 101 as "probable," and 323 as "unconfirmed." A total of 1,132 birds were reported in the 351 confirmed sightings. The number of birds per sighting ranged from 1 to 22, but most sightings were of 6 or less birds. The majority of the sightings were in Saskatchewan, Canada (52 percent), North Dakota (16 percent), Kansas (9 percent), and Nebraska (8 percent). Whoopers seem to migrate at a slower pace in the fall, resulting in 70 percent of the confirmed sightings being reported during fall migration. Since fall 1977, characteristics of many of the sites of confirmed sightings in the United States have been evaluated (e.g., vegetation, slope, water). These evaluations have contributed significant information toward determining the preferred loafing, feeding, and roosting habitats of the whooping crane. Fifty-three completed evaluations and the summary report are on file at the Pierre Area Office.

Proceedings of the Rocky Mountain Regional Rare Plant Conference, held in Denver in 1981 (see December 1981 BULLETIN), are available from the Endangered Species Office in the Service's Denver Regional Office.

Except for species known only from old collections, the rarest plant in Re-

gion 6 is the Maguire fleabane daisy (*Erigeron maguirei*) from central Utah. In 1980, only one plant was seen. This spring, a Service botanist, in an intensive search of the historic range, found only 7 plants. The canyons in which it occurs are impacted by grazing and off-road vehicle use. The region is proceeding toward listing it as Endangered.

Region 7—A preliminary report from the field crew aboard the vessel "Sea Spray" indicates that small numbers of Aleutian Canada geese (*Branta canadensis leucopareia*) have been sighted on Alaid-Nizki Islands in the western Aleutian chain. These islands were the site of last year's release of 357 Aleutian geese from the Patuxent and Northern Prairie Wildlife Research Centers. Through band identification, it has been confirmed that most of the geese are from last year's release effort. Some of the birds from this group have also been observed on nearby Agattu Island. More recently, 62 Aleutian geese were observed on the Islands of Four Mountains in the eastern Aleutians. As of June 23, it was not known whether any of the geese were attempting to nest. Buldir Island remains the only confirmed breeding colony but optimism is running high, since never before during the recovery effort have Aleutian geese been observed on so many islands.

A female American peregrine falcon banded as a nestling on the upper Yukon River of Alaska in 1979 was observed nesting at a Tanana River eyrie this summer by biologists Skip Ambrose and Michael Amaral. The distance between this bird's natal area and its nesting territory is approximately 130 miles. The sighting gives credence to the speculation that young from healthy populations (such as the Yukon River population) are recolonizing areas in other parts of the State where numbers of nesting pairs are still depressed.



Photo by Stephen E. Cornelius

An arribada at Playa Nancite. Hughes and Richard (1974) stated that this phenomenon "must rank as one of the most impressive examples of mass activity in the animal kingdom."

Researchers Study Little-Known Costa Rican Olive Ridleys

The olive ridley (*Lepidochelys olivacea*), which today is considered the most abundant of sea turtles, is widely distributed in the tropical coastal waters of the Pacific, Indian, and South Atlantic Oceans. Two Costa Rican beaches, Playa Nancite and Playa Ostional, together host the largest aggregation of these sea turtles in the world, receiving annually from 400 to 600 thousand olive ridley nestings.

The olive ridley has been consistently neglected and little is known about the factors which determine its distribution and movements. The species is least understood with regard to the reproductive stages of its life cycle. Until the 1960's it was believed that *L. olivacea*, unlike Kemp's ridley, nested singly—not in arribadas (or synchronous nesting activity). Since then, however, the species has been known to form arribadas in Mexico, Costa Rica, and India. How ridleys coordinate the mass nesting emergence and what precisely are the selective advantages of such a strategy are unclear.

In recent years, the arribada nesting phenomenon has been a key factor facilitating the mass destruction of some of the great ridley rookeries. The Mexican fleets which once represented the largest sea turtle aggregations have been decimated by over-exploitation. Populations on the coast of Orissa, India, are apparently undergoing the same destruction.

Until recently, ridleys nesting at Nancite and Ostional were considered reasonably secure, both because of the natural isolation of these nesting beaches, and because of the likelihood that the Costa Rican turtles were dis-

tinct from the Mexican populations. This sense of security was dashed, however, with the discovery of massive commercial harvests in Ecuador where some Costa Rican ridleys are known to migrate. The survival outlook for the species also was considerably altered when a tagged Costa Rican ridley was recovered in Mexican waters in 1981, opening the possibility that the Costa Rican fleets may, in fact, reach and mix with the over-harvested Mexican fleets. During the past 10 years, the size of arribadas at Nancite has remained approximately the same. Because of heavy and constant egg poaching, however, the size of arribadas at Ostional

may have decreased by 30% during the past decade.

In August 1980, a long-term tagging program directed at gathering information on seasonal movements, fidelity to mass and solitary nesting strategies, and reproductive potential of individual olive ridleys was begun at Nancite and Ostional. This scientific investigation, which was continued in 1981, is the first to be conducted in Costa Rica since the initial work done in Nancite in the early 1970's by David Hughes, Joseph Richard, and Stephen Cornelius. Research during 1980 and 1981 was jointly sponsored by the University of Costa Rica (UCR), the Costa Rican National



Photo by Jack B. Woody

Tagged olive ridley sea turtle at Playa Nancite, Costa Rica.

Park Service (CRNPS), and by the U.S. Fish and Wildlife Service. The research was coordinated by Douglas C. Robinson of UCR and by Stephen E. Cornelius, under contract to the Service.

After 2 years, the study has already provided significant new data which are central to the species' conservation and survival. The cooperative efforts of UCR students and CRNPS guards at Santa Rosa National Park have been crucial to the success of the study. Student stipends provided by World Wildlife Fund have also enhanced the program.

Study Sites

Because of their physical isolation and legislated protection within Costa Rican waters and because of the large numbers of turtles which continue to nest there, Nancite and Ostional hold great importance in the conservation of the ridley. Their importance to ridley reproduction was recognized at the World Conference on Sea Turtle Conservation (Washington, D.C., November 26–30, 1979). The resulting document "Sea Turtle Conservation Strategy," placed Nancite and Ostional second on the list of most critical sea turtle habitats worldwide.

Nancite, which is approximately 1075 m long, is located in Santa Rosa National Park in northwest Guanacaste Province. This nesting area has benefited greatly from over ten years of CRNPS protection. Ostional is located approximately 90 km south of Nancite and extends for approximately 800 m. Research at this beach continues to be hampered by poor relations with the local community, heavy poaching of eggs

during arribadas, and confusion as to which government agency is responsible for the protection and management of the species and its habitat. A presidential decree signed in December 1981 specifically addressed some of these problems and will hopefully soon permit ridley studies there to expand in scope.

Arribadas Year-round

Local lore throughout the range of the olive ridley is surprisingly consistent, predicting that arribadas will happen during the last quarter moon accompanied by strong onshore winds and on a rising tide after nightfall. However, researchers have found it difficult to substantiate the association between these extrinsic factors and the actual emergence schedule on either beach.

Even though prior to 1981 arribadas had not been known to occur during the 5–6 month period between July and December, it was suspected for several years that mass nesting of olive ridleys occurred year-round. Last year, for the first time since the park was established in 1970, the Santa Rosa Park administration made it possible to station guards permanently at Nancite. The guards witnessed four arribadas during the dry season (December 1980–May 1981) as well as made valuable observations on interarribada nesting, hatchling emergence, predation, and weather events.

Tagging Operation and Results

Among the main objectives of the ongoing tagging operation is to mark large

numbers of emerging female turtles, facilitating the study of seasonal movements, nesting periodicity, small group cohesiveness, mass nesting fidelity, and solitary nesting strategy. An important related activity is the registry of reobservations of turtles marked at the two beaches in 1980 and 1981, or earlier, to analyze the relative staying power and to note the general suitability of two different tag types which have been used for marking.

Tagging followed a prescribed schedule which allocated blocks of tags according to temporal, spatial, and behavioral aspects of the nesting season at both beaches. Monel metal tags as well as colored plastic tags were used both years. Currently, the tagged Costa Rican population is approximately 30,100, of which 20,360 carry a single metal tag, 6,170 a single plastic tag, and 3,570 which were double tagged with one of each type. Both plastic and metal tags were lost at a greater rate than expected.

In 1981, 22 tagged ridleys were reobserved outside Costa Rican waters. Nearly all countries between Ecuador and Mexico were represented in this count: 11 from Ecuador, 4 from Guatemala, 2 from El Salvador, and 1 each from Colombia, Panama, Nicaragua, and Mexico. One turtle was recovered from an oceanic location approximately 2,100 km due west of Costa Rica. Nearly 80% of all distant reobservations have come as a result of incidental catches by commercial fisheries (shrimp, shark, tuna). The remainder were returned by turtle fishermen (15%) and researchers (6%).



An arribada under sunset.

Population Estimates

Until recently, estimates of female ridleys involved in arribadas have been based mainly on the experience of the various observers—on the person's perception of what 3,000 turtles should look like on 1 km of beach. No matter how accomplished an individual becomes at making such estimates, it remains a very inaccurate method by which to measure the absolute size of the nesting population.

The critical need for more precise information regarding the reproductive effort of the olive ridley is pointed out by the magnitude of actual counts of ridleys taken by heavy commercial harvest in the east Pacific. These harvest counts offer hard data, actual counts of turtles captured, and are an *ex post facto* estimate of a population in distress.

For the past several years, the quadrat method has been used to estimate the number of female ridleys participating in arribadas. This is a very general method that is actually a true census (a total count) but only of a representative portion of the beach. In 1980 and before, there was some question as to how best to interpret the data generated by quadrat counts since there was little or no information for many associated variables, i.e. rate of multiple emergence, time on the beach, and size of the available nesting beach.

Considerable efforts were made in 1981 to improve the quadrat count system. Census quadrats of 100 m were established in the mid beach zone at Nancite. A formula based on quadrat counts and corrected for all of the variables mentioned above was used to estimate the size of the nesting population. As more data become available for the numerous variables, the formula will be refined. The researchers feel that the

formula applied to quadrat counts is an important step towards the goal of estimating the total population.

Sizes of the major arribadas at Nancite in 1981 were placed at 50,000 (August), 108,000 (September), 110,000 (October), 72,000 (November), and 18,000 (December). These estimates were compared to other calculations based on post-arribada nest density and the reobservation rate of tagged turtles. Calculations in 1981 indicate that the population probably totals 220,000 to 550,000 adult females.

Hatching Success

Hatchling emergence was quantitatively measured by V-shaped drift fence traps located at five locations in the mid beach zone. Trap wings were set at an angle of 135° and permitted an estimated capture efficiency of 100% for nests opening within 6 meters to 5% for those opening 20 meters or more from the trap.

Individual nests were marked at the time of laying with a short piece of numbered garden hose attached to a 20–40 cm long wooden stake. The stake was buried 1m distant from the nest, and a colored plastic flagging bearing the number of the nest was placed on top of the clutch just before the turtle filled the cavity. Reappearance of the flagging during a subsequent arribada indicated that the nest was at least partially destroyed by another nesting turtle. In the same manner, a predated marked nest resulted in the ribbon appearing at the surface near the nest site. At 45 days, a hardware cloth rectangular basket was placed over the nest, leaving room for the hatchlings to emerge and be counted. Towards the end of the incubation periods (about 50 days) the nest was opened and numbers of live and



Photo by Stephen E. Cornelius

An olive ridley hatchling.

moribund hatchlings left in the nest were determined.

The researchers have estimated that during an average wet season arribada 45% of the clutches are physically disrupted by predation, beach erosion, and from nesting turtles during the same or subsequent arribadas. Of the remaining clutches that survive intact to term, 93% are lost to microorganisms and possible microenvironmental unbalances at various stages of development. Of the 3% of the original clutches in which some successful hatching and emergence occurs, 75% of the eggs fail to develop to term or hatchlings die in the nest. The result of these calculations is the live hatch of 94,000 hatchlings from an arribada of 100,000 clutches averaging 106 eggs each—a hatching success rate of 0.89%.

Some of the factors listed are involved in determining hatching success at other beaches and with other sea turtle species. Conspicuous to Nancite is the extraordinary number of entire clutches which show no embryological development or which stop development at various stages before full-term incubation. A preliminary study has been undertaken by UCR to determine what microorganisms are present in the beach environment which could be possible causes for the low-hatching success.

Future Plans

Next year's plans include the continuation of both the tagging operation and of movement and distribution studies. The latter will be supplemented by a study of surface currents which hopefully will provide new information about adult and hatchling olive ridley movements. Plans are also underway to establish a regional olive ridley program which would involve all countries where the species occurs.



A 1 meter square excavation dug 40 cm into the beach at Nancite showing a nest density of 9/m², all of which contained nonviable eggs.

New Publications

Endangered and Threatened Wildlife of the Chesapeake Bay Region: Delaware, Maryland, and Virginia by Christopher P. White is now available for \$5.50. This field guide documents the status, description, habitat, behavior, and distribution of each of 41 federally protected animals and plants classified as Endangered or Threatened in the Chesapeake Bay region. The 4½" x 7" volume has 160 pages and is illustrated with full-color photographs and paintings, and distribution maps. It was published as a cooperative project supported by the Chesapeake Bay Foundation and the U.S. Fish and Wildlife Service. Order [#0-87033-287-2] from Tidewater Publishers, P.O. Box 456, Centreville, Maryland 21617.

Phases I-IV of the U.S. Fish and Wildlife Service sponsored Kellert reports on public attitudes toward wildlife are now available through the Government Printing Office (GPO). Copies may be ordered by calling the GPO Order Desk at 202/783-3238, giving the name and stock number of the report, and VISA or Master Charge card number; or by writing to the U.S. Government Printing Office, Superintendent of Documents: S.S.M.C., Washington, D.C. 20402, giving the same information as above, and enclosing a check made out to GPO.

The GPO stock numbers and prices for the four publications are: Kellert, Stephen R., "Phase I—Public Attitudes Toward Critical Wildlife and Natural Habitat Issues," #024-010-00-623-4, \$6.50; Kellert, Stephen R., "Phase II—Activities of the American Public Relating to Animals," #024-010-00-624-2, \$7.00; Kellert, Stephen R. and Joyce K. Berry, "Phase III—Knowledge, Affection and Basic Attitudes Toward Animals in American So-

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	52	2	0	7	1	2	64
TOTAL	194	43	445	45	7	24	758

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 10 animals
8 plants

Number of Critical Habitats listed: 51
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 54
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

June 30, 1982

ciety," #024-010-00-625-1, \$6.50; and Kellert, Stephen R. and Miriam O. Westervelt, "Phase IV—Trends in Animal Use and Perception in 20th Century America," #024-010-006-21-8, \$7.00.

The University Presses of Florida in cooperation with the State of Florida Game and Fresh Water Fish Commission have announced the availability of the sixth volume in the series, *Rare and Endangered Biota of Florida*, Peter C. H. Pritchard, general editor. Volume VI, *Invertebrates*, edited by Richard Franz is now available for \$7.50. The other volumes are available at the following prices: Volume I—Mammals, at \$5.00; Volume II—Birds, at \$7.00; Volume III—Amphibians and Reptiles, at \$5.50; Volume IV—Fishes, at \$5.00; and

Volume V—Plants, at \$10.50. They are now all available from the University Presses of Florida, 15 Northwest 15th Street, Gainesville, Florida 32603.

A cumulative index of the *Endangered Species Technical Bulletin* (July 1976—December 1981) is now available. Copies may be requested by writing the Office of Endangered Species, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

The *U.S. List of Endangered and Threatened Wildlife and Plants* (50 CFR 17.11 and 17.12), reprinted January 1, 1982, is now available. Please request copies from the Office of Public Affairs—Publications, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Endangered Classification Extended to Ocelots in the U.S.

The ocelot (*Felis pardalis*) was listed as Endangered throughout almost all of its range in 1972 but, due to an oversight in the original rulemaking process, those few occurring in the United States (Texas and Arizona) did not receive protection. Accordingly, the Service has published a separate rule (F.R. 7/21/82) extending the Endangered classification to ocelots occurring in these two southwestern States.

Background

Habitat modification and market hunting for its valuable fur resulted in a serious decline in the ocelot throughout its range in North, Central, and South America, leading the Service to list the cat in 1972 as Endangered under the Endangered Species Conservation Act of 1969. The requirement in the 1969 law, however, that governors of any affected U.S. States be notified at the time of listing was overlooked, and the ocelot was listed as a "foreign" species

only. When the oversight was discovered and it appeared that ocelots in the U.S. were not Federally protected under the Endangered Species Act of 1973 (which superceded the 1969 Act), the Service published a proposal (F.R. 7/25/80) to rectify the original error and to gather additional information on the species' status. Four other "foreign" species, which were thought to be in the same situation as the ocelot, were also proposed: the short-tailed albatross (*Diomedea albatrus*), thick-billed parrot (*Rhynchopsitta pachyrhynchus*), jaguar (*Panthera onca*), and margay (*Felis wiedii*). These species, however, are not included in the final rule.

Only two comments pertaining to the proposed ocelot listing were received. The Governor of the State of Texas fully supported listing the ocelot, as well as the other species in the proposal. In opposition, a private organization called the National Association for Sound Wildlife Programs asserted that (1) there is no scientific documentation that

the ocelot throughout its range is Endangered or Threatened in the wild, (2) there is ample evidence that the species has been exterminated in the wild in the U.S., and (3) if it is not exterminated, there is no evidence of a viable population in the wild in the U.S. The Service found that there is ample evidence to disprove all three of the Association's comments. Based on the best scientific and commercial information available, the 1972 listing is appropriate and the status of the ocelot is continuing to deteriorate due to habitat destruction throughout vast areas of Latin America. Evidence has been received showing that a viable breeding population of 12 to 60 animals does still occur on about 50,000 acres in southeastern Texas, but they are subject to the same threats as ocelots to the south. A few ocelots are thought to cross the border occasionally into Arizona; therefore, that State was included in the rule.

Effects of the Rule

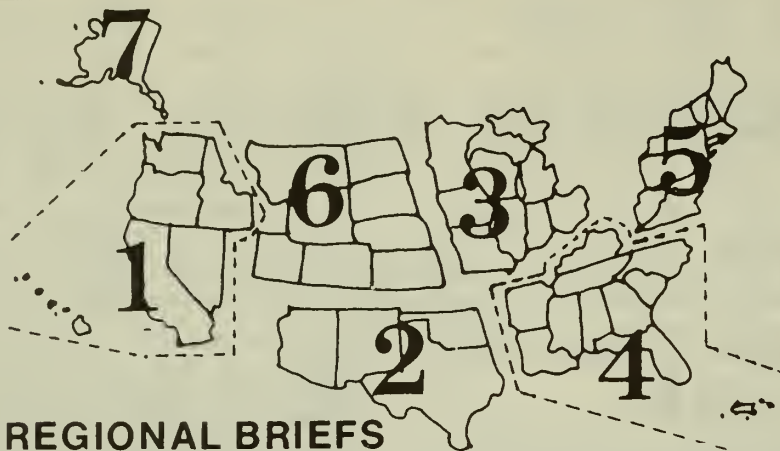
The listing rule extends the protection of the Endangered Species Act of 1973, including the prohibitions on "taking" and the Federal habitat conservation provisions under Section 7, to ocelots in the two States. (Taking of ocelots is already prohibited under Texas law.) About 20,000 acres of ocelot habitat currently are being managed for the cat at Laguna Atascosa National Wildlife Refuge. The remaining 30,000 acres in private ownership are used primarily for livestock grazing and lease hunting for deer, uses which are entirely compatible with the listing and will not be affected negatively in any way.

Critical Habitat was not determined at this time for two reasons. Ocelots are extremely valuable commercially for their fur, and pinpointing the location of their last U.S. population could encourage illegal taking. Further, much of the ocelot's habitat is already protected on the Laguna Atascosa Refuge.

The 2-year deadline imposed under amendments to the 1973 Act for making final determinations on proposed listings has expired for the other species included in the proposal, although they are not precluded from future listing consideration.



Ocelots in Texas and Arizona are now protected as Endangered by the Endangered Species Act.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of July:

Region 1—Property, totalling 577 acres, at Blue Ridge (Tulare County, California) was optioned on June 23, 1982. This property is part of the impor-

tant roost area for the severely Endangered California condor (*Gymnogyps californianus*).

Field work for the forest bird survey in the Commonwealth of the Northern Marianas was completed on June 5, 1982. Three months were spent collecting field data during which the Is-

lands of Rota, Tinian, Saipan, and Aguiguan were surveyed by Service personnel and were assisted throughout by Department of Natural Resources staff from the Mariana Islands. The variable circular plot method was used in the survey, and on the four islands 42 transects and 782 stations were marked. Counts were made at each of the stations. In addition to the forest bird survey, several previously unreported seabird colonies were visited and mapped. This is the first comprehensive and systematic survey to be completed on these islands. The results will be used in updating the Endangered and Threatened Species List, as an information base in planning development projects, and in formulating environmental legislation in the newly established commonwealth government. Preliminary findings include the following: The Tinian monarch, *Monarcha takatsukasae*, an endemic species on Tinian, was found to be abundant though it is listed as Endangered. The Micronesian megapode, *Megapodius laperouse*, also listed as Endangered, was found to have a more extensive distribution on Saipan than was previously thought. The nightingale reed-warbler, *Acrocephalus luscini*, also listed as Endangered, is common throughout most of Saipan, but is rare on Aguiguan. The Vanikoro swiftlet, *Aerodramus vanikorensis*, a candidate for listing, was not found on Rota or Tinian, and has apparently become extinct on these two islands within the last 20 years. The bridled white-eye, *Zosterops conspicillata*, another candidate, is abundant on Saipan, Tinian, and Aguiguan, but has disappeared from the lowlands of Rota within the last 20 years. Possibly a newly introduced disease has affected the swiftlet and white-eye populations. An undescribed seabird colony on Naftan Islet, 1 km south of Aguiguan, harbored several non-listed seabird species, including the sooty tern, *Sterna fuscata*; common noddies, *Anous stolidus*; wedge-tailed shearwater, *Puffinus pacificus*; brown booby, *Sula leucogaster*; and masked booby, *Sula dactylatra*.

During 1981, the two Marianas mallards (*Anas oustaleti*) kept at Sea World in San Diego, California, died. They are believed to have been the only birds of their species in captivity, and they died before producing any young. Once occurring on Guam, Saipan, and Tinian, the duck is now extinct on Guam and estimates made in 1979 suggested that probably fewer than 20 were still in existence in the wetlands of Saipan and Tinian. The decline has been attributed to hunting by humans and introduced predators (such as the Polynesian rat), and the loss of wetland habitats due to changing land uses. Lucian Kramer, a

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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biologist with the Service's Pacific Islands Area Office in Honolulu, spent two weeks in Saipan in late May of this year in an attempt to locate and capture up to two pairs of Marianas mallards so that the captive propagation effort could be continued. Mist nets were erected in the vicinity of Lake Susupe on Saipan, and surrounding wetlands were intensively watched. No Marianas mallards, however, were heard or seen. Reports of sightings were followed up, but were discovered to be misidentifications of other bird species, often including Chinese bitterns and other ducks that pass through Saipan on their yearly migrations. Although it cannot be stated that the Marianas mallard is extinct, it can be said that its numbers must be dangerously low.

Following the May 10 emergency listing of the Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*), and the Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*), a status survey for these two Endangered fishes was conducted by biologists from the Reno and Sacramento Endangered Species Offices and the Nevada Department of Wildlife. Efforts continue to secure the privately owned habitat of the two Ash Meadows fishes through land exchange proposals.

The California least tern (*Sterna albigula brownii*), is experiencing an exceptionally poor nesting season in San Diego County so far this year. Essentially, no young were fledged in the first nesting period (through June). Although avian and mammalian predation is an annual problem at most nesting colonies, several colonies usually manage a successful breeding season. Predation has been so acute and widespread to date that all colonies have completely failed, except at Santa Margarita River, which has the highest numbers of nesting pairs in over a decade. If any recruitment is to occur this year, it will have to occur in the second nesting period (largely renesters and second year birds breeding for the first time).

Three peregrine falcon (*Falco peregrinus*) chicks, bred in captivity at the Santa Cruz Predatory Bird Research Group Lab, were transported to the Oregon coast and placed in an artificial nest structure on a cliff as part of a reintroduction project. The project, being administered by the Oregon Department of Fish and Wildlife, is part of an effort to reestablish a viable population of peregrine falcons in Oregon. The birds made the transition to the hack box in good condition. Following release from the hack box, two birds were lost to predation. The remains of one falcon confirmed predation by a great horned owl (*Bubo virginianus*). To date, the third falcon is doing fine, is being moni-

tored by radio telemetry, and hopefully will establish a territory somewhere along the Oregon coast.

A draft Environmental Assessment/Environmental Impact Report (EA/EIR) on the San Bruno Mountain Habitat Conservation Plan and Endangered Species Section 10(a) Permit, San Mateo County, California, is available for public review and comment (F.R. 7/26/82).

Region 2—Little Creek in Gila National Forest (Gila Wilderness), Arizona, has been renovated to eliminate exotic brown trout (*Salmo trutta*), and barriers were built to prevent their return, which allowed reintroduction of native Gila trout (*Salmo gilae*). These activities result from the 1979 Gila Trout Recovery Plan, and are designed to help lead to an eventual downlisting of the species.

The Western Division of the American Fisheries Society held its annual meeting recently in Las Vegas, Nevada. One session was devoted to the rearing of Endangered fishes, and four of the seven papers presented at the session involve Dexter National Fish Hatchery (New Mexico). Proceedings of the session will be published separately by the U.S. Forest Service.

Dexter personnel have tagged all of the 42,000 1982 year-class of razorback suckers (*Xyrauchen texanus*) and have stocked 16,000 into historic habitat within Arizona.

Region 3—On July 21, five immature peregrine falcons from the University of Saskatchewan were placed on a hacking tower at Kellogg, Minnesota. The cooperative effort also involved the Service, the Minnesota Department of

Natural Resources, and The Nature Conservancy; Northern States Power donated the poles and put them in place.

The recent Michigan Department of Natural Resources (DNR) census of the State's Endangered Kirtland's warblers (*Dendroica kirtlandii*) recorded 200 singing males, a drop of 14 percent from 1981. Biologists estimate the total number of males and females to be about 400. The annual event is a cooperative effort of the Michigan DNR, the Service, and local Audubon Society chapters.

The first confirmed bald eagle (*Haliaeetus leucocephalus*) hatched in Missouri in 40 years is joining two eaglets from Minnesota at a hacking station on Mingo National Wildlife Refuge in southern Missouri. Concern for the Missouri eaglet (nicknamed "Adversity") mounted after first one parent, then the other, disappeared. Although underweight when taken from the nest, the young is eating and appears to be adapting well. The project involves the Service, the U.S. Army Corps of Engineers, and the Missouri Department of Conservation.

Region 4—Researchers working in cooperation with the Patuxent Wildlife Research Center have estimated that there may be 250 Everglade kites (*Rostrhamus sociabilis plumbeus*) now present in Florida. This is considerably higher than the 109 which were counted in a previous survey conducted in late 1981. The kites dispersed from their normal range following the severe drought which struck south Florida in

Continued on page 5



On July 21, 1982, the Newton Corner Regional Director, Howard Larsen (left) presented Gary J. Taylor (right), Nongame and Endangered Species Program Manager for the Maryland Wildlife Administration, with a Service award and Letter of Commendation, acknowledging Taylor's involvement with endangered species conservation. Taylor is the team leader of the Chesapeake Bay Bald Eagle Recovery Team and is largely responsible for the completion of the Chesapeake Bay Bald Eagle Recovery Plan, signed by the Service's Director May 19, 1982.

U.S. Fish and Wildlife Service Photo

Rulemaking Actions—July 1982

McKittrick Pennyroyal Listed As Threatened with Critical Habitat

The Service has listed the McKittrick pennyroyal (*Hedeoma apiculatum*) as a Threatened species and has determined its Critical Habitat (F.R. 7/13/82). This plant occurs in Texas and New Mexico.

The number of existing individuals is estimated to be less than 1,100 and their reproductive potential appears to be low. Populations occurring on Federal lands are threatened by the gradual destruction of habitat through long-term overuse, and need to be considered in plans for park development. The single known population on private land would be potentially threatened by any major change in land use.

McKittrick's pennyroyal, a member of the mint family, was first collected in 1882 but remained undescribed until 1939. A long-lived perennial herb, this plant forms dense tufts of leaves from woody rootstocks and stands 10 to 15 cm in height. Its showy pink flowers are solitary or in two to three-flowered clusters, 2 cm in length and, as with many mints, the flowers are axillary and crowded towards the apex.

Hedeoma apiculatum is endemic to open, limestone rock surfaces and outcrops in canyons along streamways in the Guadalupe Mountains of Texas and New Mexico at elevations above 1660 meters and is particularly vulnerable to disturbance. These plants are found in a substrate consisting mostly of sands caught in rock fissures and in weathered pockets of limestone. Both the plant and its fragile habitat could be threatened by trampling and unplanned development.

Only two comments were received following the publication of a proposed rule (F.R. 8/15/80) to list the species with Critical Habitat. The Superintendent of Guadalupe Mountains National Park in Texas commented through the Southwest Regional Director of the National Park Service on the proposed Critical Habitat. He strongly recommended, for management reasons, that the McKittrick Ridge site be deleted from the proposal. The Service, however, retained this area in the final Critical Habitat determination since it is one of the three major populations and, therefore, necessary and critical to the species' continued survival.

The Texas Organization for Endangered Species commented on the shortness of time between publication of the proposal and the date set for the public meeting (8/27/82). The Service ex-

plained an oversight which caused this unfortunate situation. No comments were received from the Governors of Texas and New Mexico. One National Park Service representative made an oral comment at the public meeting, expressing concern about the effect a Critical Habitat determination might have on park hiking trails, particularly McKittrick Ridge trail. The Service responded that it was extremely unlikely

Hawaiian Plant Proposal Reopened for Comments

The comment period for the Service's proposal to list *Panicum carteri* (Carter's panicgrass) to be an Endangered species and determine Mokoli'i Island, Hawaii, as its Critical Habitat was reopened for 90 days (F.R. 7/29/82). This extension is intended to allow the Service to discuss the issue with local officials and receive further comments from such officials and from the public.

Panicum carteri is an annual grass known only to occur on Mokoli'i Island, Hawaii, and was believed to be extinct until its rediscovery in 1976. It was proposed for listing as Endangered with Critical Habitat on January 30, 1981, and comments were received until April 30, 1981. Comments received in response to that proposal included one from the Governor of Hawaii and one from the Mayor of Honolulu, both recommending against taking the proposed action.

Service Studies Alligator Regs

The Service published an advanced notice (F.R. 7/16/82) making known its intent to review special rule 50 CFR 17.42(a) on the American alligator (*Alligator mississippiensis*), and seeking comments and suggestions regarding the workability of the current special rule. This rule regulates commercial activities with hides, meat, and parts (teeth and skulls) of American alligators. Comments and suggestions received prior to August 16, 1982, will be used to help determine whether changes are appropriate and, if so, to formulate a proposed rulemaking revising the special rule.

that they would request that the trail be moved, and stated that it is appropriate at this time to monitor the impact of hikers on this population.

The Critical Habitat for *Hedeoma apiculatum* includes the three areas in Texas where the three largest populations of the species occur. Critical Habitat was not proposed at this time for the smallest population in Guadalupe Mountains National Park (Texas), the population in Lincoln National Forest (New Mexico), or the population located on private land. These are all very small populations which are not well studied or understood, in contrast to the three areas with the larger populations which constitute the Critical Habitat. This rule becomes effective August 14, 1982.

In particular, the Service seeks the views and recommendations of those possessing information regarding the status of this species, the suitability of Mokoli'i as Critical Habitat for it, and possible beneficial or detrimental consequences likely to follow from its listing and designation of Critical Habitat. All further comments and recommendations should be submitted to the Service by October 27, 1982; please mail them to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240; or Pacific Islands Administrator, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, P.O. Box 50167, Honolulu, Hawaii 96850.

Permit Regulations Revised

Regulations controlling the issuance of permits for activities involving Endangered and Threatened species have been revised by the Service (F.R. 7/15/82). This final rule is effective August 16, 1982.

The revision contains three distinct parts: (1) consolidation and simplification of permit requirements, (2) clarification of the schedule of permit application fees, (3) the implementation of a formal appeals procedure, and (4) procedures for objecting to issuance of permits. In addition to Part 17 (Endangered and Threatened wildlife and plants), the revision also affects Parts 13 and 16 under 50 CFR.

Address correspondence regarding this rule to the U.S. Fish and Wildlife Service, Federal Wildlife Permit Office, P.O. Box 3654, Arlington, Virginia 22203, or call 703/235-1903.

African Elephant Special Rule Revised

The Service has published in final the revised rule (F.R. 7/20/82) regulating trade in the ivory of the Threatened African elephant (*Loxodonta africana*). This rule complements but does not amend the regulation of the species under Appendix II listing on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

In 1978 when the species was listed under the Endangered Species Act of 1973, a special rule, still in effect, was promulgated which makes interstate and foreign commerce of the African elephant (and its parts and products) illegal. Since that time, the Service has found the restrictions on interstate commerce burdensome, ineffective, and unnecessary.

The new special rule requires all ivory imported into the United States to be marked according to the recommenda-

tions of CITES, and rescinds all interstate regulation of the species. The rule will, thereby, allow the Service to concentrate its law enforcement efforts more effectively, and counteract the African elephant's primary problems, poaching and smuggling of ivory in its raw form.

The new special rule eliminates the requirement that raw ivory must originate in and remain in a chain of trade composed of Party countries from country of origin to the U.S. Instead, the rule requires that raw ivory originate in a Party country and be exported to the U.S. from a Party country. The rule adds the requirement that raw ivory imported into the U.S. bear a punch-dye mark established by the rule, which will help assure that the ivory was legally acquired in the country of origin. An 18 month exception to this import requirement is provided. However, effective

September 20, 1982, unmarked raw ivory exported from the U.S. during this time must bear a mark provided by a Service permit.

With regard to worked ivory, the rule eliminates the requirement that it originate in a Party country and remain in a chain of trade composed of Party countries. It substitutes, instead, a requirement that worked ivory must be exported to the U.S. from a Party country.

The proposed rule covered all parts and products of the African elephant, whereas the final rule only covers ivory—adequate controls exist for live elephants and for other parts and products in the regulations that implement CITES (50 CFR 23). The rule becomes effective September 20, 1982. In general, the comments on the special rule as proposed (F.R. 7/17/82) favored its adoption. Comments that recommended changes in the proposed rule are addressed in the final rule. Other differences between the proposed and final rules are also detailed in the text of the rule.

REGIONAL BRIEFS

Continued from page 5

1981, and have been found to be nesting this year in the area of Lakes Kissimmee and Tohopekaliga in Osceola County. No previous nesting records are known for this area. About 50 nesting attempts have been made so far this season with 24 young being produced. About 20 of these young probably have survived largely as the result of biologists taking unstable kite nests constructed in cattails and transferring them to stable wire baskets attached to poles (at the same height and location as the original nest). The adult kites have generally accepted the nest transfer within 30 minutes after making the change.

Region 6—The Black-footed Ferret Advisory Team met in Cheyenne, Wyoming, on June 22. The major item of discussion was the joint research proposal prepared by Service biologists of the Denver Wildlife Research Center and biologists with Biota Research and Consulting, Inc. The researchers were given the go-ahead by the team to do an intense and coordinated survey to determine a minimum number of black-footed ferret (*Mustela nigripes*) litters/young in the Meeteetse, Wyoming, area and to obtain dispersal information on young ferrets.

A whooping crane (*Grus americana*) from the Grays Lake NWR flock was found dead on July 15 in the San Luis Valley in southern Colorado. The bird had been spending the summer on private land near Monte Vista NWR.

Cause of death is unknown, so a necropsy will be done.

Region 7—The triennial survey of the breeding colony of Aleutian Canada geese (*Branta canadensis leucopareia*) on Buldir Island has been completed. The breeding population on Buldir is estimated at 280 pairs, almost a two-fold increase since the last census in 1979. Preparations are nearly completed for what could be the last large release of captive-raised Aleutian geese. The recovery team has recommended that trapping wild geese from Buldir Island and transplanting them to release is-

lands should become the primary means of establishing new breeding colonies of this Endangered subspecies of goose. Accordingly, most of the captive flock being held at Northern Prairie Wildlife Research Center will be released this August in the western Aleutians. Concurrent with this effort, a team of eight Service biologists and volunteers will capture family groups of wild Aleutian geese on Buldir and transplant them to Agattu Island. It is hoped that, when the young from these families are sexually mature, they will return to the area of their first flight (Agattu) to breed.

CITES News—

Bobcat Rule Suspended

A final rule (F.R. 10/14/81) authorizing the export of bobcat (*Lynx rufus*) taken during the 1981–82 season is again suspended, this time for a 4-month period (F.R. 7/15/82). This action, taken to conform with the U.S. District Court injunction prohibiting the Service from authorizing the export of bobcat after July 1, 1981, became effective July 15, 1982.

On February 3, 1981, the District Court for the District of Columbia found the Office of Scientific Authority's (OSA) guidelines for allowing export invalid and issued an injunction which prohibited the Service from authorizing export of the species under CITES. In light of this, the Service postponed the effective date of its October 1981 final rule for 60 days while it sought vacation of the injunction. However, on December 15,

1981, the District Court denied the motion of the Service to vacate the injunction on grounds that OSA failed to promulgate guidelines consistent with a previous ruling by the U.S. Court of Appeals.

Accordingly, the Service remains under court injunction prohibiting the export of bobcat and has suspended the October rule twice—first for 6 months (F.R. 1/12/81) and, now, for 4 months. Guidelines for export of bobcats in the 1982–83 season are now being developed to satisfy court requirements. After presentation of the new guidelines to the court, further notice will then be published to announce whether or not bobcats taken in the 1981–82 season may be exported. (See the November 1981 BULLETIN for more information on the October 1981 rules).

Recovery Plan News:

Three Plans Approved

During the past month the Service's Director approved three recovery plans for listed species: Gray Bat Recovery Plan (7/8/82), Red Wolf Recovery Plan (7/12/82), and Kendall Warm Springs Dace Recovery Plan (7/12/82).

Gray Bat

The gray bat (*Myotis grisescens*) is perhaps the most restricted to cave habitats of any United States mammal, migrating seasonally between hibernating and maternity caves which provide specific feeding and thermoregulatory needs. It congregates in larger numbers and in fewer caves than most other North American bats, a phenomenon which, in itself, poses a serious threat to the species.

Prior to recent major declines, individual hibernating populations of gray bats contained from 100,000 to 1,500,000 or more individuals. Currently, approximately 95 percent (1,575,000 bats) of the entire known population hibernates each winter in only nine caves in southeast U.S., with more than half in a single cave. Populations are found mostly in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee, but a few occur in small portions of Florida, Georgia, Kansas, Indiana, Illinois, Oklahoma, Mississippi, Virginia, and possibly North Carolina.

The gray bat is the largest species of *Myotis* in the eastern U.S. Unlike other members of the genus, its wing membrane connects to the foot at the ankle rather than at the base of the first toe. Unlike all other bats of the eastern U.S., the gray bat has unicolored dorsal fur—all other eastern bats have distinctively bi- or tri-colored fur on their backs. Following molt in July or August, gray bats are dark gray, but they often bleach to chestnut brown or russet between molts.

Reason for Decline

The primary cause of the gray bat's decline is human disturbance. Each arousal from hibernation by human entry into a hibernaculum is energetically expensive, using the bats' energy reserves which cannot be replaced before spring emergence. Simple arousal and movement to a new nesting place probably costs the bat as much as it would normally expend in 10 to 30 days undisturbed hibernation. Repeated entries during a single winter can exhaust the bats' limited energy reserve, resulting in high levels of mortality. Disturbance of maternity caves can cause female bats to drop nonvolut young or leave the

roost, causing a loss of precious communal body heat.

Other probable causes of gray bat decline are (1) the influence of pesticides, (2) other chemical pollutions or siltation of waterways over which gray bats forage, and (3) deforestation of areas near cave entrances and between caves and rivers or reservoirs where gray bats may feed. Cave commercialization and improper gating of cave entrances have also contributed to the species' decline.

Recovery Actions

Since the gray bat was listed as Endangered in 1976, encouraging progress has been made. The Service has purchased Sauta Cave, an important known summer cave, and is considering other important acquisitions, including the only major gray bat hibernaculum in Kentucky. The Service also fenced and posted Cave Springs Cave, a major summer cave on the Wheeler National Wildlife Refuge in Alabama. A decade ago, the formerly large maternity colony at this cave was destroyed, and only a transient group of approximately 9,000 bats remained. Following only 2 years of protection from human disturbance, this colony has returned to maternity status and increased to more than 19,000 bats.

Acquisition and management actions have been undertaken by a number of Federal and State agencies. Especially active in acquisitions and protection of gray bat caves are Region 4 of the Service, Tennessee Valley Authority, National Park Service, U.S. Forest

Service, U.S. Army Corps of Engineers, and Missouri Department of Conservation, and the Tennessee Wildlife Resources Agency.

The most important recovery action called for by the Gray Bat Recovery Plan is the acquisition and protection of major gray bat caves. The immediate objective would be to reduce human disturbance in occupied caves. Protecting caves may require sign-posting, fencing, and surveillance by enforcement agents. The plan also calls for the control of habitat destruction, development of public education programs, and continued research to investigate the effects of environmental disturbance.

Implementation of the recovery plan will be initiated by the Service's Tennessee Valley Regional Director. Further information on the gray bat recovery effort can be obtained by contacting the Regional Director (see page 2 for address).

Red Wolf

Very little detail regarding the life history of the red wolf (*Canis rufus*) is known since no significant studies were made when viable wild populations existed. The species was first described by the explorer Bartram in 1791 and thought to have consisted of three subspecies. Recent findings indicate that the only extant subspecies, *C. r. gregoryi*, once occurring from eastern Texas to eastern Mississippi, no longer survives in the wild in the pure form.

The initial decline of the species



A standard 6-foot cyclone fence was erected across the only entrance of Cave Springs Cave on Wheeler National Wildlife Refuge, Decatur, Alabama, to restrict people from entering this major summer cave for the gray bat. Since this picture was taken, more barbed wire has been stretched across the top of the fence, providing an additional deterrent to intruders.

believed to have been caused by increases in human population, changes in land use during the early 1900's, and predator control activities. As the species declined, coyotes rapidly moved into western portions of the red wolf's range. Reproductive isolation between surviving red wolf populations and the coyote broke down and led to the establishment of hybrids which invaded the final range of the red wolf in southeast Texas and southwest Louisiana.

The red wolf was listed as Endangered in 1967, and a limited Red Wolf Recovery Program was established that same year. In 1973, after passage of the Endangered Species Act, the species was selected for priority treatment, and an expanded program to save the species was initiated by the Service in cooperation with the Louisiana Wildlife and Fisheries Commission and the Texas Parks and Wildlife Department. Early program findings confirmed that the species was confronted by habitat loss, loss of young to parasites, persecution by people, and an irreversible dilution of the gene pool by invading coyotes and hybrids.

By 1975, it was concluded that it was no longer possible to preserve the red wolf gene pool in the wild. The objectives of the program then became to locate and capture as many pure members of the species as possible, preserve them in captivity, and explore the possibility of reestablishing the species in areas of its historic range. Because of hybridization and the resultant sympatric occurrence of specimens ranging in appearance from coyotelike to wolflike, the Red Wolf Recovery Program has had to be quite selective in choosing individuals that represent the red wolf subspecies *C. r. gregoryi*. Selections have been made using established minimum standards.

A captive breeding program for the red wolf had already been established in 1973 through the Metropolitan Park Board of Tacoma at the Point Defiance Zoological Garden in Tacoma, Washington. The objectives of this program, which is part of the overall recovery program, are to certify the genetic purity of wild-caught wolves, increase the number of genetically pure wolves in captivity, and maintain a red wolf gene pool for reestablishment of the species in the wild and/or distribution to selected zoological gardens.

The red wolf captive breeding program has produced pups each spring since 1977. As of July 1982, the program was maintaining 9 wild caught wolves and 45 captive-born young, varying in age from 3 months to 5 years. Although the majority of the animals remain at the program center in Tacoma, a few individuals have been distributed to other cooperating facilities.



The sign shown above is erected near the Kendall Warm Springs and outflow stream, alerting passers-by to the uniqueness of the Kendall dace habitat.

Mated pairs of adult wild-caught red wolves were experimentally released on Bulls Island in the Cape Romain National Wildlife Refuge near Charleston, South Carolina in the late 1970's. Results of this effort indicate that it is possible to reestablish adult wild caught red wolves in selected habitats in the wild. Limited experiments with wild-caught but captive reared pups in Texas also indicate that the establishment of captive-reared specimens in the wild is possible. A proposal for experimentally establishing the species in the wild was completed in early 1981 and is currently being administratively reviewed.

The ultimate goal of the Red Wolf Recovery Plan is to return the species to nonendangered status. Such a goal may be unattainable as it would require the establishment of viable self-sustaining populations throughout a major portion of the species' former range. At this time information is insufficient to determine whether viable self-sustaining populations can be established outside of strictly controlled areas.

The Red Wolf Recovery Plan essentially authorizes the actions already being executed by the Red Wolf Recovery Program. Further information on the recovery effort can be obtained by contacting the Atlanta Regional Director (see page two for address).

Kendall Warm Springs Dace

The Kendall Warm Springs dace (*Rhinichthys osculus thermalis*) inhabits the Kendall Warm Springs and its outflow. The habitat, which is about 300 meters long, is located on the east side of the Green River in Sublette County, Wyoming, in Bridger-Teton National Forest.

The Kendall dace, which was listed as Endangered in 1970, is the only fish inhabiting the springs. The spring water originates at near 29.4°C (85°F) and drops in temperature at the outfall to about 26.6°C (78°F) in the winter.

Dace adults range from 23 mm (0.9 in.) to 54 mm (2.1 in.) in size and prefer mainstream eddies and pools. Breeding males are often a bright purple color, but the females are typically dull olive green.

The origin of the dace is attributed to its isolation behind a travertine barrier formed at the confluence of the springs flow and the Green River. This separation provides a unique and isolated habitat, which is believed to have allowed the Kendall dace to evolve from the speckled dace (*Rhinichthys osculus yarrowi*) which occurs in the river. Additional study, however, needs to be done to clarify the relationship of the two subspecies.

Different types of activities have affected the integrity of the Kendall Warm Springs Creek for years. Livestock use has often been heavy because the springs are located along an old cattle drive. Grazing and trampling have affected both the stream and the plant life in and around the spring flowage. In 1969, the U.S. Forest Service enclosed 160 acres surrounding three sides of the spring to protect it from further impact.

Man's use of the spring to bathe and wash clothing has caused one of the most potentially harmful impacts to the aquatic community. Invertebrate samplings taken around 1975 suggested that the use of soaps and detergents had depressed the aquatic community.

Continued on page 8

New Publications

A New Service publication, "Wolf Depredation on Livestock in Minnesota," by Steven H. Fritts (Resource Publication 145, February 1982) is now available free of charge. Single copies may be requested from the U.S. Fish and Wildlife Service, North Central Forest Experiment Station, 1992 Folwell Avenue, St. Paul, Minnesota 55108.

1981 *Potentialia robbinsiana* Educational Program and Hiker Survey by Dorothy T. Taylor, Research Department of the Appalachian Mountain Club is now available for \$2.50. Write Dorothy T. Taylor, Appalachian Mountain Club, Pinkham Notch Camp, Gorham, New Hampshire 03581 to purchase a copy.

A limited quantity of the "Proceedings of the U.S. Strategy Conference on Biological Diversity, November 16-18, 1981," is available from the Service. To request a single copy, please write the Director (OES), U.S. Fish & Wildlife Service, 18th and C Streets, N.W., Washington, D.C. 20240.

A cumulative index of the *Endangered Species Technical Bulletin* (July 1976-December 1981) is now available. Copies may be requested by writing the Office of Endangered Species, U.S. Fish and Wildlife Service, 18th and C Streets, N.W., Washington, D.C. 20240.

RECOVERY PLAN NEWS

Continued from page 7

To protect against this, the Forest Service closed the waters to bathing or wading and prohibited the use of soaps, detergents, or bleaches. A barrier was erected to prevent vehicles from driving into the springs.

For many years the Kendall dace was

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	18	223	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Claims	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	52	2	0	8	1	2	65
TOTAL	194	44	444	46	7	24	759

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 9 animals
7 plants

Number of Critical Habitats listed: 52

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 57

Number of Cooperative Agreements signed with States:

38 fish & wildlife

11 plants

July 31, 1982

commonly used as fish bait. However, in the early 1960's the Wyoming Game and Fish Department stopped issuing permits to seine or trap the dace.

A road which was built in 1934 and is still the main transportation route for access into the upper Green River and the northern end of the Bridger Wilderness, impacts the Kendall dace habitat at one point where about 25 feet of the stream was replaced by culverts. Culverts may prevent upstream movement of the dace, isolating the upper half of the population.

The objective of the Kendall Warm Springs Recovery Plan is to recover the species through maintenance of current

population levels and protection of the existing habitat. The plan also calls for additional taxonomic studies and habitat related research.

Implementation of the recovery plan will be initiated by the Service's Denver Regional Director and through the Denver Regional Endangered Species Staff. Further information on the Kendall Warm Springs dace recovery effort can be obtained by contacting the Regional Director (see page 2 for address).

Copies of all three recovery plans will be available in four to six months from The Fish and Wildlife Reference Service, Denver Public Library, 3840 York Street, Denver, Colorado 80205.

August 1982

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Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Eastern States Orchid Listed as Endangered

The small whorled pogonia (*Isotria medeoloides*), which numbers fewer than 500 individual plants in 10 states in the eastern United States and Canada, was listed by the Service as Endangered (F.R. 9/10/82). The continued existence of this rare orchid is endangered by taking of the plants and loss of habitat.

The species was named in 1814 and was known historically to occur in 48 counties in 16 eastern States and Canada. Today it is known to occur in 15 counties in 10 different States (Illinois, Maine, Michigan, New Hampshire, New Jersey, North Carolina, Pennsylvania, Rhode Island, South Carolina, Virginia) and one county in Ontario, Canada. Two of the 17 known sites are located on U.S. Forest Service land; the remainder are on privately owned land. Over 70 percent of the known plants are in Maine.

Critical Habitat has not been determined for *Isotria medeoloides* on the basis that the disclosure of specific localities would further endanger the orchid's continued existence, making it vulnerable to taking for noncommercial purposes. This fear is not unfounded—today, there are nearly as many, if not more, dried specimens of the species in herbaria than are known to exist in the wild.

Many former localities, some dating back to the late 1800's, have been inadvertently lost due to habitat alteration. Based on herbaria label data and recent field checks of these sites, shopping malls, housing developments, and golf courses now mark the localities of historical populations. Conservation programs for the species, therefore, must be concerned with the availability of information on specific sites, so that neither inadvertant nor deliberate destruction occurs.

The plant can be found in a variety of forest types but is most often associated with relatively open areas in deciduous hardwoods. The orchid produces one or two yellowish-green flowers (from mid-May in the south to mid-June in the north) above a whorl of five or six

light green, elliptic, somewhat pointed leaves. The short sepals are up to 2.5 cm long and help distinguish the species from the other member of the genus, *Isotria verticillata*, which is more common and has longer sepals. At maturity the plants are 9.5–25 cm tall.

Isotria medeoloides was originally proposed for listing on June 16, 1976, but was subsequently withdrawn in 1979 in accordance with the listing deadline imposed by the 1978 Amendments to the Endangered Species Act. The Service repropoed the species on September 11, 1980, basing its proposal on sufficient new information which indicated that it is in danger of extinction.

A total of 38 comments were received in response to the reproposal, including letters from the Governors of 15 States. All these interested parties and Governors supported the proposal to list *Isotria medeoloides* as Endangered.

The U.S. Forest Service supported listing the species throughout its historical range, citing no significant impact of listing on the 2¼ acres of National Forest areas in which the species occurs. Comments received from the Governor of Michigan indicated that the Michigan Nature Association currently owns the land on which the small whorled pogonia occurs in that State. The land

was purchased several years ago solely for the purpose of protecting this rare orchid population.

The species is officially listed as an endangered species by State law in Michigan, North Carolina, and Massachusetts, and in the Province of Ontario, and the Government of Canada. Official listing under the 1973 Act, as amended, will provide a means by which various conservation and recovery actions can be implemented to insure the continued existence of this plant throughout its range. Michigan, Connecticut, Rhode Island, North Carolina, and South Carolina, all States in the species' range, have entered into formal agreements for the protection and conservation of plants as provided by Section 6(c)(2) of the Act. About 50 individuals of *Isotria medeoloides* could be covered by the agreements.

The U.S. named this species on a provisional list for the Annex to the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere during a conference held in Mar del Plata, Argentina, October 1965. The species was included on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) at the original plenipotentiary conference in Washington, D.C. in February and March 1973.



This rare orchid (*Isotria medeoloides*) is endangered by taking and habitat loss.

Photo by Irene Stuckey

OCT 29 1982

CLEMON

REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of August:

Region 1—Three peregrine falcon (*Falco peregrinus*) chicks, bred in captivity at the Santa Cruz Predatory Bird

Research Group Lab, were transported to the Columbia River Gorge on the Washington side and placed in an artificial nest structure (hack box) near a historic eyrie as part of a reintroduction effort. The project is being funded by the Service, administered by the Washing-

ton Department of Game, and carried out by personnel of the Santa Cruz facilities. This is the second hacking attempt this year within the Olympia Area; the first was in Oregon (see June 1982 BULLETIN). It is hoped that these birds will survive and eventually establish territories in the Columbia River Gorge.

The peregrine falcon, as a breeding species, has been extirpated in Idaho for about a decade. To help the reestablishment of a breeding population in that State, the Service cooperated in a reintroduction project with the Peregrine Fund West (Fort Collins, Colorado), the Idaho Department of Fish and Game, and two private contributors (the Simplot and Boise Cascade Corporations). Two release sites were established in Idaho in the summer of 1982. A total of eight peregrine falcons were successfully released and fledged from these sites. This provides optimism for the future of the peregrine falcon recovery program in Idaho. A minimum of 90 birds will be released in the State during the next 5 to 7 years.

Forty-nine active peregrine falcon pairs have been monitored for reproductive success in California, and 15 sites were manipulated to improve reproductive success. Sixty young fledged from these wild nests for an average of 1.2 young fledged per active pair, although 14 of the sites failed to fledge young. Four young peregrines were cross-fostered to two pairs of non-listed prairie falcons (*Falco mexicanus*), and 12 young were released at four hack sites. This resulted in 76 young peregrines added to the California wild population in 1982. Almost all young were banded prior to fledging.

An agency review draft of the Macfarlane's Four O'Clock Recovery Plan has been completed. This plant is a member of the Nyctaginaceae or "four o'clock" family. In Latin, its generic name, *Mirabilis* means wondrous. This species, *M. macfarlanei*, was named for Ed Macfarlane, a boatman on the Snake River who pointed out the plant to Rollins and Constance in 1936. These botanists described the species later that year. In 1947, Davis, an Idaho botanist, discovered it on the Salmon River in Idaho. Later fruitless searches for *Mirabilis* led botanists to consider it possibly extinct. It wasn't until 1978 that a small colony was noted in Hell's Canyon Recreation Area in Oregon. It has since been found in three additional localities, including what is thought to be the type locality. The most recent discovery, the Long Gulch site in Idaho, consists of several hundred plants. In October, 1979, *Mirabilis macfarlanei* was listed as an Endangered species.

The Service is contracting a status survey for three endemic shrews: the

Continued on page 10

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Captured Chick Rekindles Hope for Condor Program

A California condor chick (*Gymnogyps californianus*), the first bird to be successfully taken from the wild for the Cooperative California Condor Conservation Program, is doing well at its new home, the San Diego Wild Animal Park. The bird will eventually be used in a captive breeding program designed to help recover the severely Endangered species.

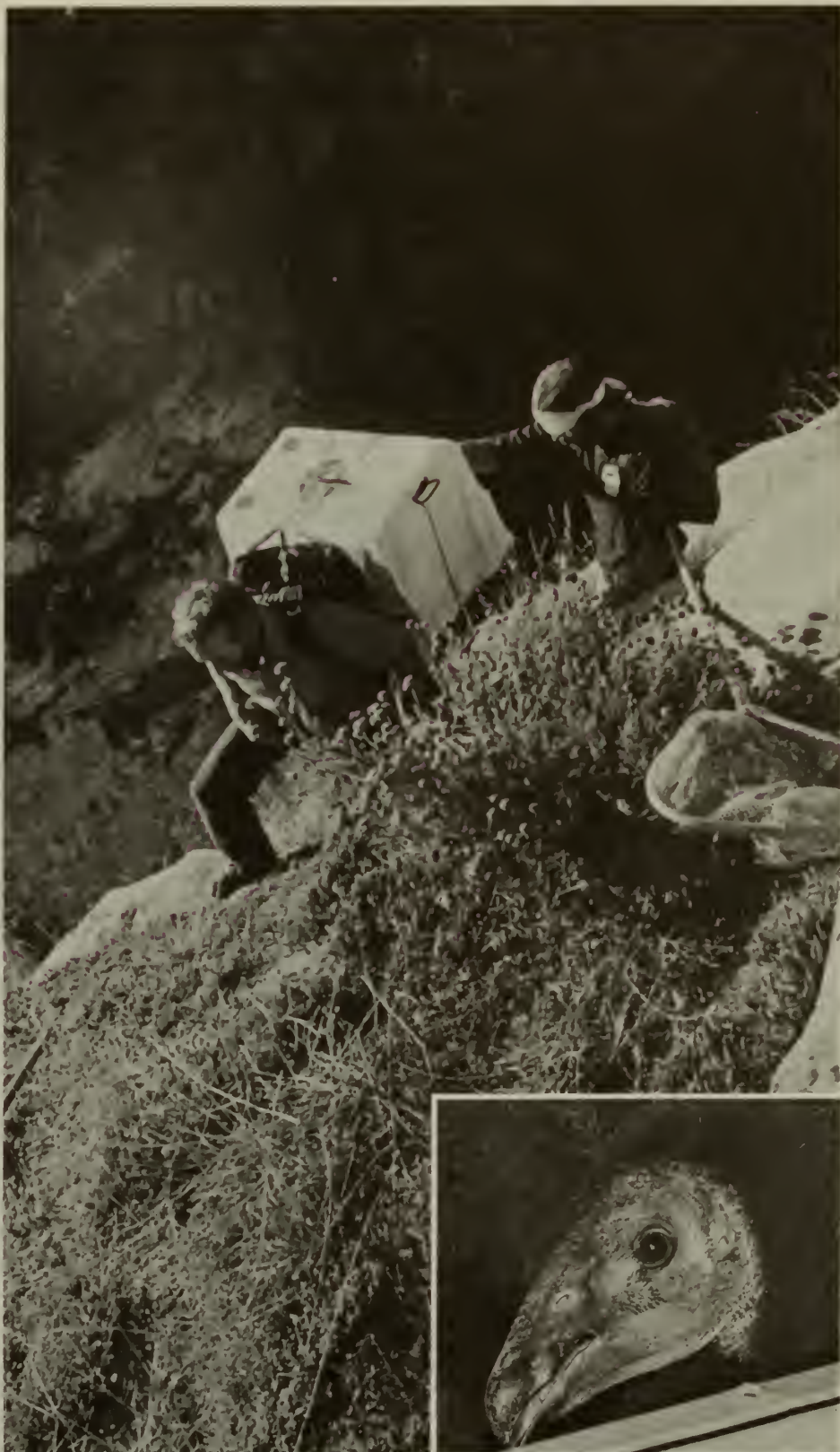
Members of the condor research team, which is separate from the advisory recovery team, captured the 14-pound chick in the mountains near Ventura, California, on August 13, 1982. It has taken food readily since it was placed (the same day) in the Wild Animal Park, and it now weighs well over 16 pounds. Blood samples will be taken later on to determine the bird's sex. Team members described the chick's capture as "probably the most important event in the 2½ years of the condor recovery program."

No condors have been trapped since the program began in December 1979. Because of the expected slow pace in trapping condors for the captive breeding program, more consideration has been given by the team in recent months to alternate ways of forming a small captive breeding population. One option—now actually initiated with the team's recent success—is the taking of nestlings from wild pairs.

This procedure will have less impact on the wild population than would the taking of adult or free-flying, older, immature condors. Field observations indicate that a pair that loses its egg, and possibly its chick, is very likely to relay within a year. Usually, parent condors care for a chick through a winter and spring following its fledging and wait 2 years to renest.

Therefore, as a second alternative to trapping, the team hopes to remove an egg laid by a wild pair and incubate it at the San Diego Zoo. Once hatched, the egg would provide a bird to eventually become part of a captive breeding population. Meanwhile, the wild pair should recycle (lay a second egg), and still have the potential for producing a chick the same year.

Double clutching of Andean condors (*Vultur gryphus*), a species that is also Endangered, has already been successfully achieved at the San Diego Zoo. Also, the recent success of one wild pair of California condors in recycling (laying a second egg shortly following the loss of a first egg) provides verification for this behavior in the California condor (see the March and May 1982 issues of the BULLETIN for the story).



Noel Snyder, field biologist for the Service's Condor Research Center, carries a travel case containing a California condor chick down from the Ventura-area nesting site where the condor was captured on Friday, August 13. Dr. Phil Ensley, veterinarian for the Zoological Society of San Diego, accompanied Snyder for the capture operation. The condor (inset) was taken to the San Diego Wild Animal Park to begin a captive breeding program for this critically Endangered species.

U.S. Fish and Wildlife Service Photo by Helen Snyder

San Diego Zoo Photo by Ron Garrison

Brighter Prospects for the 'Io Seen in Co-op Unit Study

Third in a series on Endangered species projects being conducted by the Service's Cooperative Research Units Program.

The 'io, or Hawaiian hawk (*Buteo solitarius*), was once considered a guardian spirit, watching over and protecting some of the old families of Hawaii. In later times, however, it became the hawk that needed protection when habitat alteration, illegal shooting, and introductions of exotic species jeopardized its future. Fortunately, recent field studies conducted under the Cooperative Research Units Program indicate that the status of the hawk now appears relatively stable.

From March 1980 through June 1983, Curtice R. Griffin, a University of Missouri doctoral candidate, is the primary field investigator for a Missouri Cooperative Wildlife Research Unit project on the life history and ecology of 'io, the first major study of this species. Griffin has had wide experience with raptors in various parts of the continental United States, including a study of wintering bald eagles (*Haliaeetus leucocephalus*) at Swan Lake National Wildlife Refuge (Missouri). He has also worked with the Endangered Galapagos hawk (*Buteo galapagoensis*) which, like the 'io, is endemic to an island ecosystem. The study is being done under a cooperative agreement with the Endangered Species Ecology Section of the Patuxent Wildlife Research Center.

Assisting Griffin in the field studies are Peter W. C. Paton and Sheila J. Doyle. The leader of the Service's Missouri wildlife co-op unit, Dr. Thomas S. Baskett, serves as co-investigator. Among other Service representatives participating in the project are Dr. J. Michael Scott, of the Mauna Loa Field Research Station, and Larry F. Pank, former leader of the Hawaii Wildlife Damage Research Station. The Institute of Pacific Islands Forestry (U.S. Forest Service) and the Hawaii Field Research Station (National Park Service) are also cooperators.

Since comparatively little was known about the life history and ecology of 'io, the project has been addressing a variety of topics, including breeding chronology, reproductive success, food sources (and their relation to the possible effects of environmental pollutants), home range sizes (as a possible aid in

estimating population densities), and the impacts of predation and human disturbance.

The 'io is small buteo endemic to the Island of Hawaii, and is the sole native hawk in the archipelago. Widely distributed on the island, the bird is locally common on the slopes of Mauna Loa and Mauna Kea. Although the distribution of the hawk may not have changed significantly since the 1890's, it has suffered a steep decline in numbers. Estimates made as recently as 1968 gave the total population number as in the

low hundreds. The 'io was listed as Endangered in 1967.

Nesting Observations

Information on the hawk's breeding biology and nesting behavior was gathered from April through September during the 1980-1981 seasons through the use of time-lapse cameras at some nests and extensive observations from blinds at other locations. Despite some technical problems with the cameras, data were gathered on the young hawks' nestling and early post-fledgling stages.

Although clearing of forests for agriculture and construction over the years has reduced the number of potential nesting areas, the hawks occasionally nest in relatively open areas (such as pastures and along agricultural fields) if some trees remain. The researchers emphasize, however, that although the hawk shows a remarkable ability to use highly modified habitats, the extensive destruction of native forests has undoubtedly reduced the quality of habitat available, resulting in lower densities than in earlier times.

Nests are built at heights ranging from 60 feet to as low as 12 feet. The 'io uses the same nest each year, adding to it each season until it can become as large as 40 inches across and 30 inches deep. The nests observed in the study were found in a number of different species of trees, and almost a third were built on top of large native birdnest ferns (*Asplenium nidus*), which provide a stable platform for nest construction.

The nesting site tenacity of the 'io is illustrated by an incident that occurred in June 1980, when a hawk nest blew down leaving a downy chick homeless. Griffin's wife, Bridget, filled in as a foster parent for 2 days while Griffin and Paton worked at getting the chick back to its parents. Their first attempt at constructing a substitute nest in a tree near the old site failed because the female would not fly to the new nest. But when they placed a new nest at the site of the old nest, the chick was immediately accepted and later successfully fledged.

The hawks observed during the field studies nested from March through September, and most laid their eggs in late April and early May. Although the fragmentary early literature gave the aver-

Continued on page 6



Mature 'io are found in light and dark phases, as shown by this pair at their nest in a native koa (Acacia koa) tree. The two color phases do not indicate either age or sex.

by Curtice R. Griffin/Missouri Wildlife Co-op Unit

ACTION ON 3 PLANTS

Two Hawaiian Plants Proposed as Endangered

Two plant species, the cuneate bidens (*Bidens cuneata*) and the Diamond Head schiedea (*Schiedea adamantis*), which occur only on Diamond Head, O'ahu, Hawai'i, have been proposed by the Service as Endangered (F.R. 8/23/82). Both plants are jeopardized by habitat deterioration associated with hiking trails, encroachment by exotic plant species, a significant fire hazard, and plans to develop the area for recreation, along with their very small numbers and restricted distribution.

Background

B. cuneata (an herb) and *S. adamantis* (a small shrub) are known from a single small population each, restricted to the rim of Diamond Head Crater. The total known number of mature individuals for each species was recently estimated at 10 and 78, respectively. Because both plant colonies are located immediately adjacent to a trail used heavily by hikers, habitat deterioration resulting from this activity is of particular concern. Soil compaction, promotion of erosion through loss of vegetative cover, and possibly inadvertent trampling of plants due to passage of hikers have resulted from continued use of the crater rim path.

Human impacts on the sites are expected to intensify if the State fulfills its plans to develop Diamond Head into a

public park and recreation area. Additional public use also will probably increase the hazard of fire, which is already a significant threat to the plants because of the dry conditions in the area during part of the year. Because of the extremely small numbers of remaining individuals and their very limited distribution, a single fire could result in the species' extinction. Another constant threat to both taxa, as well as much of Hawai'i's other native flora, is competition by aggressive exotic vegetation.

Critical Habitat for the two species was not proposed at this time. The extremely low number of individuals, the restricted range, and the proximity of both populations to a heavily used hiking trail would make the plants highly vulnerable to inadvertent or deliberate damage by curiosity seekers and vandals if the exact locations of the populations were publicized. However, under Section 7 of the Endangered Species Act, no Federal agency can fund, authorize, or carry out any actions likely to jeopardize the continued existence of the plant. The prohibitions on import/export and trade would also apply.

Under Hawaii law, listing by the Federal Government would bring the species under additional protection by the State, which prohibits taking of listed plants and imposes restrictions on State agencies similar to those included in Section 7 of the Act.

Both of the proposed species are of great scientific interest because they are members of families which have undergone much evolutionary diversification in Hawaii, and they belong to genera that would make excellent models for the study of evolution and adaptive radiation in insular floras. The Hawaiian species of *Bidens* have been, and are still being, used for such studies. Additionally, *Schiedea*, an endemic genus of the carnation family, has an unusual floral structure and is of scientific interest due to its reproductive system.

Public Comment Requested

Comments on the listing proposal are requested from all interested persons, organizations, and agencies, and should be received by the Pacific Islands Administrator (U.S. Fish and Wildlife Service, P.O. Box 50167, Honolulu, Hawai'i 96850) by November 22, 1982.

'Ewa Plains 'Akoko Listed as Endangered

The 'Ewa Plains 'akoko (*Euphorbia skottsbergii* var. *kalaeloana*), a native plant found only near Barbers Point, O'ahu, Hawai'i, has been listed by the Service as an Endangered species (F.R. 8/24/82). Extensive development of its habitat and an invasion of aggressive exotic plants are the primary threats to the 'akoko.

Background

The small shrub is one of four plant taxa originally described as endemic to the 'Ewa Plains on the southwestern corner of Oahu. Another variety of the same species (*E. s. var. skottsbergii*) formerly was found nearer the shoreline in the same general area, but has not been seen since 1932 and is presumed extinct. A third plant, a species of grass, is presumed extinct, and the fourth species, another shrub, is considered vulnerable. These plants have adapted to a habitat consisting of a low coralline plain covered with karst features such as sinkholes, irregular ridges, and blocky rock masses. It lies in the rain shadow of the Ko'olau Mountains and receives less than 20 inches of precipitation annually.

Plant habitat on the 'Ewa Plains has been subject to varying degrees of disturbance since Polynesian settlement of the islands, with most of the develop-

Continued on page 7



Bidens cuneata

Reprinted from NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS, Otto Degener, January 15, 1940.



Schiedea adamantis

Reprinted from PACIFIC SCIENCE, Vol. XXIV, No. 2, April, 1970.

HAWK

Continued from page 4

age clutch size as two to three eggs, the researchers found that only one egg was produced at the nests where egg numbers could be determined. Fledging success rates for nesting attempts were well over 50 percent in both years. Most of the incubation, which lasted about 38 days, was done by the female while the males secured the food. The females' tolerance for the male at the nest then declined markedly during the nestling stage.

The young birds usually fledged in late July and August, at about 8 to 9 weeks (almost twice as long as the nesting period of similarly sized buteos in temperate regions), and they remained in the nest area for several months to over a year. As a result of this careful parental care, and the fact that these insular raptors are nonmigratory, the survival of fledglings appears to be substantially higher than that of most mainland raptors.

Feeding Analysis

The 'io preys on a wide variety of native species, and takes many that have been introduced—accidentally and on purpose—on the Big Island. Among the organisms upon which the hawk feeds are mice, rats, mongooses, insects, mynah and rice birds, and even crayfish. Contamination of the food chain by DDT and other long-lived pesticides, which was a major factor in the decline of such mainland raptors as the bald eagle and peregrine falcon (*Falco peregrinus*), does not appear to have occurred for the 'io. Several unhatched eggs and a dead chick were salvaged during the study, and were sent to the Service's Patuxent Wildlife Research Center for analyses; no traces of organochlorides and only very low levels of heavy metals were found. (A necropsy of the chick indicated that it had died of internal injuries after falling from its nest.)

Radio Telemetry

An important part of the project involved radio-tracking 'io throughout both their breeding and nonbreeding seasons to gather information on home range size. The telemetry data are still being analyzed to determine the bird's foraging behavior, patterns of habitat use, and population densities. During the study, 3 juvenile and 11 adult hawks were radio-tagged, and their movements tracked by ground triangulation. The 3 young birds were monitored for more than 7 months each before the units failed or were removed by the birds, and much information was gath-

ered on post-fledgling movements. The tracking success rate was lower with the 11 units fitted on adult hawks, although some did operate normally and contributed valuable data. The high removal and failure rate of 9-gram tail-mounted units in 1980 was greatly reduced in 1981 when the researchers switched to 10-gram back-mounted units.

The Future

Although the data collected during the field observation phase of the study are still being analyzed, it is apparent that the 'io is more numerous than earlier believed, and that the population may now be stable. The breeding strategy of the bird is well suited to the tropical climate of Hawaii. Its small clutch size, along with its long incubation and nestling periods, contrast sharply with hawks in temperate zones. Productivity is good and, other than humans, there

are no serious predators of 'io and their young.

Under a separate contract, Griffin is preparing a Hawaiian Hawk Recovery Plan, which will provide a detailed guide for research and management for recovery of the species. Among the continuing threats to the hawk that will be addressed in the plan are habitat modification, which effects population densities, and human disturbance. The 'io is quite tame away from its nest, and can be easily approached, making it particularly vulnerable to rock throwing and illegal shooting. Excessive human presence at the nest can cause the hawk to abandon the site.

Compared to many native Hawaiian forest birds, the future of the 'io looks brighter if high quality native habitat is conserved, human disturbance is reduced, and the public is better educated to the value of Hawaii's irreplaceable natural heritage.



Curtice Griffin inspecting an 'io nest high in a native ohia lehua (*Metrosideros* sp.) tree on a ranch adjacent to Hawaii Volcanoes National Park.

'AKOKO

Continued from page 5

ment occurring in recent decades. The area now supports a naval air station, sugar plantation, and industrial park, as well as some residential development, limestone quarrying, and livestock operations. Only about 12 percent of the plains remain undeveloped. Future plans include the expansion of the industrial park and completion of a deep-draft harbor. Due to habitat disturbance and past introductions of exotic plants, the 'Ewa area supports predominantly non-native vegetation dominated by kiawe (*Prosopis*) and koa haole (*Leucaena*), with only remnant populations of native species.

Regulatory History

The 'Ewa Plains 'akoko was first proposed by the Service as Endangered in 1976, along with about 1,700 other plants identified in a petition prepared by the Smithsonian Institution. In accordance with the listing deadline imposed by the 1978 Amendments to the Endangered Species Act, the proposal was withdrawn in December 1979. The 'akoko was repropoed as Endangered on September 2, 1980, based in part on new information provided under contract by the University of Hawai'i.

All those responding to the proposal, with the exception of the Governor of Hawai'i and the Smithsonian Institution (the latter provided no additional comments), indicated that the status of the plant was such as to warrant listing as Endangered. Among the agencies generally supporting the proposal were the U.S. Army Corps of Engineers, the U.S. Department of the Navy, and the U.S. Forest Service; a number of private organizations and individuals also responded favorably.

The Governor asserted that efforts by the Corps of Engineers and a private developer involved at Barbers Point would insure the plant's survival through the proposed establishment of sanctuaries and of transplanted populations within the 'Ewa Plains. He also opposed the listing on the grounds that it might effect construction of the deep-draft harbor at Barbers Point. The Service responded that the results of existing conservation measures are not yet conclusive, that recent transplantation experiments with the 'akoko have not been successful, and that the available information indicates a pattern of long-term decline and significant losses in the plant. Further, current data make it probable that, while some plants would be lost during harbor construction and associated development, the species as

a whole would not be subjected to further significant jeopardy by the project if the long-range planning incorporates conservation measures. Recently, another population of the 'akoko was found on Federal land in the area. Because this discovery will lessen the impact of harbor construction on the species overall, little likelihood is foreseen of an irreconcilable conflict between the deep-draft harbor and Federal management of the 'akoko.

A determination of Critical Habitat for the 'akoko was found by the Service to be neither biologically feasible or of benefit to the plant at this time. Because the 'Ewa Plains environment is heavily disturbed by development and dominated by exotic vegetation, and because the precise habitat needs of the plant are not known, no area can be identified upon which are found physical or biological features essential to the conservation of the species. This does not preclude a Critical Habitat determination in the future if further studies warrant.

Effects of the Rule

As an Endangered species, the 'Ewa Plains 'akoko may not be imported or exported by anyone subject to the jurisdiction of the United States, or be entered into interstate or international trade. Certain exceptions apply to authorized agents of the Service and State conservation agencies. Permits may also be granted for approved conservation purposes.

The rule also requires that Federal agencies insure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species. This provision allows the U.S. Army Corps of Engineers and the U.S. Naval Air Station at Barbers Point to consult formally with the Service concerning their activities in the area as they might affect the 'akoko, so that plans can be developed to insure the species' survival. Such plans may include the establishment of new populations of the taxon in protected areas within the 'Ewa Plain as well as protection of existing populations on Federal property.

Colorado Plant Given Endangered Status

Phacelia formosula (North Park phacelia), which is known only from two populations 5 miles apart in Jackson County, Colorado, has been listed by the Service as Endangered (F.R. 9/1/82). Threats to the species include motorcycle use of the habitat, potential oil and gas or coal exploration, and damage from cattle trampling.

Phacelia formosula was originally proposed for listing on June 16, 1976, but was subsequently withdrawn in 1979 in accordance with the listing deadline imposed by the 1978 Amendments to the Endangered Species Act. The Service repropoed the species on September 2, 1980, based on sufficient new information which indicated that it is in danger of extinction.

Background

The North Park phacelia was first discovered in 1918 and published as a new species in 1919. Modern work on the species did not begin until 1969, when Dr. Duane Atwood rediscovered the historical (type) locale and published an analysis of the species. This historical population, located on a sandstone bluff above the Michigan River, has been severely disturbed by heavy motorcycle use and some trampling by cattle. This population has fluctuated from 22 plants in 1979 to, perhaps, a maximum of 200 in the very favorable season of 1981.

A second population, found in 1981, consists of five sites in an 8-mile stretch along the North Platte River. The major concentration of plants (around 2,500 individuals) was at one of these sites, while the other four sites consisted of only 3 to 15 plants each. The North Platte site hosting the major concentration of plants is within a "Known Recoverable Coal Resource Area," has been partially leased for oil and natural gas

Continued on page 8



Phacelia formosula is known only from two populations in Jackson County, Colorado.

Photo by Karen Wiley-Eberle

Reclassification Proposed for Texas Alligators

The American alligator (*Alligator mississippiensis*) in Texas has been proposed for reclassification from Endangered and Threatened to Threatened due to Similarity of Appearance (F.R. 9/13/82). If the proposal becomes final, it would constitute formal recognition by the Service of the large reptile's biological recovery within the State. Commercial take of Texas alligators, currently illegal, would then be authorized in accordance with a State management plan and the Service's special rules. The proposed rule would not affect the alligator in other parts of its range.

COLORADO PLANT

Continued from page 7

exploration, and also is subject to cattle trampling.

Reproductive success of the historical population is reported to be very poor. Disturbance within any given year is potentially intensified because of the species' probable biennial life cycle. In the first year, it produces a basal rosette of leaves. The following year, it sends up a flowering stem, usually branched at the base, with violet flowers in several coiled branches. This second-year plant sets seed and dies.

Comments on the 1980 proposal all supported listing this species. Critical Habitat was not proposed, since publication and a public meeting on the plants' type location near a town would increase the risk of vandalism.

Priority for coal development within the species' habitat is low; the BLM has declared its portion of the site unsuitable for coal development. The potential for exploratory drilling is considered medium to low.

Effects of the Rule

Section 7(a) of the Endangered Species Act of 1973, as amended, requires Federal agencies to evaluate their actions with respect to potential impact on any listed species. Part of the North Park phacelia's habitat is managed by the Bureau of Land Management (BLM) and will, therefore, be covered by the provision. In addition, since the species is listed under the Act, certain other conservation authorities become available and protective measures may be undertaken for it. These could include the use of Federal and State funds for the species since Colorado has a plant cooperative agreement under Section 6(c)(2) of the Act.

Background

The alligator was Federally listed as Endangered in 1967 after poaching and overhunting for its fashionable leather led to a decline in the species. (In 1969, the State of Texas closed alligator seasons.) Subsequent recovery of the alligator in some parts of its range under Federal and State protection has allowed the gradual reclassification in areas where it is most secure. Currently, the alligator is listed as Threatened due to Similarity of Appearance in Louisiana; Threatened in Florida and certain coastal areas of Texas, Georgia, and South Carolina; and Endangered throughout the remainder of its range in Texas, Georgia, South Carolina, North Carolina, Alabama, Mississippi, Arkansas, and Oklahoma.

Alligators in coastal Texas were reclassified to Threatened on January 10, 1977. Service data indicate that from 1977 to 1979, four national wildlife refuges along the Texas coast showed an increase in their alligator populations. Other data gathered by State, university, and private biologists also point to greater numbers through increased nesting and nesting success. According

to the Texas Parks and Wildlife Department, nest densities appear to be near maximum and population growth may have reached optimum proportions. The overall situation for alligator habitat is considered good because much of the prime habitat is under State or Federal control and because water storage activities are increasing habitat availability.

The final rule, if approved, will change the status of all alligators in Texas from Endangered or Threatened to the special category of Threatened due to Similarity of Appearance. This classification, authorized under Section 4(e) of the Endangered Species Act, would remove Federal agency habitat conservation responsibilities under Section 7 and return primary management authority to the State.

Public Comments

All individuals, agencies, organizations, or other interested parties are invited to submit written comments on the reclassification proposal by November 12, 1982. Address comments to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

Santa Barbara Song Sparrow Proposed for Delisting

The Service has proposed to remove the Santa Barbara song sparrow (*Melospiza melodia graminea*) from the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 8/9/82). This action is being taken because the species has become extinct.

The sparrow formerly occurred only on Santa Barbara Island, Los Angeles County, California—an island only 2.6 km² in size—where it was extremely abundant. Removal of native vegetation for farming and by introduced domestic goats and rabbits reduced the habitat for this species. Feral house cats probably became significant predators once dense vegetation was destroyed. Even so, the species was able to maintain high numbers on certain portions of the island until 1959 when a major fire destroyed much of its remaining habitat. The fire was so intense that two-thirds of the island was denuded down to the mineral soil.

In spite of regular visits to Santa Barbara Island by ornithologists in the years following the fires, including intensive surveys for the sparrow in 1974 and 1978, no individuals of this subspe-

cies have been seen in over 20 years. The island is easily surveyed, so it is certain that the species has not been overlooked.

The bird was classified as Endangered in 1973, under the Endangered Species Act of 1973. No Critical Habitat was designated. This action will simply acknowledge the species' extinction and remove it from protection under the Act.

Public Comments

All individuals, agencies, organizations, or other interested parties are invited to submit written comments on the reclassification proposal by November 12, 1982. Address comments to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

Interested persons and organizations are requested to submit comments to the Regional Director (ARD/FA) U.S. Fish and Wildlife Service, 700 N.E. Multnomah Street, Suite 500, Portland, Oregon 97232 (503/231-6131). All comments must be received by November 8, 1982.

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Export Guidelines, Proposed Bobcat Findings Published

The Service has announced its proposed findings on the export of bobcats (*Lynx rufus*) from this country, and its decisions on the guidelines used in making the findings (F.R. 8/20/82). Proposed guidelines were presented to the public for comment earlier (F.R. 4/5/82); a summary of these comments is also included in the August notice.

The Service proposed to approve export of bobcats harvested during the 1982–83 season in the following States on the grounds that the guidelines are expected to be met: Alabama, Arizona, Arkansas, California, Colorado, Georgia, Idaho, Kansas, Klamath Tribe, Louisiana, Maine, Massachusetts, Minnesota, Mississippi, Montana, Navajo Nation, Nebraska, Nevada, New Hampshire, New Mexico, New York, Oklahoma, Oregon, South Dakota, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming.

The Service proposed not to grant general approval for exports of bobcats harvested in certain States that have received export approval in the past. Presently the Service lacks assurance that the guidelines will be met in these States: Florida, Michigan, Missouri, North Carolina, North Dakota, South Carolina, Tennessee, and Virginia.

The Service proposed these guidelines in order to comply with the ruling by the U.S. Court of Appeals for the District of Columbia (Defenders of Wildlife vs. Endangered Species Scientific Authority, 659 F. 2d 168 [1981]) that bobcat exports may not be permitted under CITES unless the Service's Scientific Authority findings were based on "reliable estimates of the bobcat population and data showing the total number of bobcats to be killed in each of the States involved." The proposed guidelines responded to a subsequent District Court decision which held that the Service's decision-making methodology for making findings for the 1981–1982 season did not comply with the Court of Appeals ruling (see February 1982 BULLETIN for details).

Comments on the Guidelines

The Service received comments and information on the guidelines from 24 State wildlife conservation agencies, the majority of which took issue with the Court of Appeals' evaluation of wildlife management techniques. In general, States indicated that they adequately regulate the harvest of bobcats on the basis of various types of information other than population estimates, which they contend have little practical value for management purposes because of their low statistical reliability and the high cost of research to generate them.

These remarks were supported by comments submitted by the International Association of Fish and Wildlife Agencies, the Wildlife Legislative Fund of America, and the National Alligator Association. Since the Court of Appeals ruling requires population estimates and information on harvest levels, however, the Service is unable to adopt these comments.

Several States commented on the proposal requirement of a numerical limit on harvest that would be deemed nondetrimental. They indicated that harvest limits can be set by adjusting the length and timing of harvest and by specifying harvest methods. They consider the establishment of a finite harvest number as neither feasible or necessary. Several States also commented, rejecting the requirement that a precise percentage of the population be established as a limit for harvest. The Service agrees that any such percentage is arbitrary and inappropriate in view of the low precision attainable for population estimates and the need to base harvest levels on each State's population research findings. Accordingly, the Service deleted this requirement from its proposed guidelines.

Comments submitted on behalf of Defenders of Wildlife and the Humane Society of the United States commended the Service for its proposed guidelines and stated that, in general, they meet concerns and requirements set out in

the Court of Appeals decision. Both organizations, however, stated that the guidelines needed further clarification and detail. The Service has, in most cases, modified the guidelines to satisfy their suggestions. Comments on the proposed findings were accepted until September 20, 1982.

Forfeited Wildlife Products Sold

In September, the Service held the first Government sale of forfeited wildlife products. The sealed-bid auction was to dispose of African elephant ivory products, Appendix II reptile leather goods, and assorted items involved in Lacey Act violations. The items were on public display in a Federal Building in Brooklyn, New York, prior to the sale, which the General Services Administration conducted for the Service. Sealed bids were due before 11 a.m. on September 29, and winning bids will be awarded by October 8.

In 1978, through passage of the Fish and Wildlife Improvement Act, Congress authorized the Service to dispose of the forfeited wildlife. The Service published final regulations on methods of disposal in the April 23, 1982, *Federal Register*. The regulations limit the types of wildlife the Service may sell—the sale of migratory birds, bald and golden eagles, and species listed on Appendix I of CITES is prohibited. Endangered and Threatened species and marine mammal products may be sold only if the item or species may be lawfully traded in interstate commerce, such as American alligator products, African ivory, and authentic Alaskan Native articles of handicraft or clothing. The Service did not sell any item for which it is the sole source. Unsuccessful bidders at the auction can find the same or comparable items from other lawful sources.

The Service intends to hold similar sales in the future. For further information contact: Division of Law Enforcement, U.S. Fish and Wildlife Service, U.S. Department of Interior, Washington, D.C. 20240 (202/343-9242). Please refer to FWS-F-0130 when making inquiries.

Appendix II Species Findings Proposed

The Service has proposed export findings for certain CITES Appendix II species taken in the 1982–83 harvest season (F.R. 8/31/82). Species involved are the lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), Alaskan gray wolf (*Canis lupus*), Alaskan brown bear (*Ursus arctos*), American alligator (*Alligator mississippiensis*), and American

Botswana to Host Fourth Regular CITES Meeting

The fourth regular meeting of the Conference of Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has been tentatively scheduled for April 19 to 30, 1983, in Gaborone, Botswana. A notice announcing a series of public meetings preparatory to the CITES meeting and seeking information and comments on the agenda was published by the Service (F.R. 8/5/82).

This is the first of a series of notices which together with public meetings provide the public an opportunity to participate in the development of the U.S. negotiating positions for the Botswana meeting. The Service will consider all comments and information received by October 31, 1982, concerning the provisional agenda. (Please consult the *Federal Register* for details of the proposed agenda.) The Service plans to publish a notice of proposed negotiating positions during the latter part of November 1982, to hold a public meeting on such positions around the middle of February 1983, and to publish a notice of negotiating positions around the beginning of April 1983.

Organizations and agencies wishing to send observers to the Botswana meeting are responsible for so informing the Secretariat. In the past, the Secretariat has required that such notice be given at least one month prior to the meeting. The Secretariat may be contacted at the following address: CITES Secretariat, Avenue du Mont-Blanc, CH 1196, Gland Switzerland, Telex: 22618 IUCN ch, Cable: IUCNATURE GLAND.

Persons wishing to be observers representing U.S. national nongovernmental agencies must also receive prior approval of the Service. Such requests for approval should include evidence of technical qualification in protection, conservation, or management of wild fauna and flora. Requests should be sent to the Director, U.S. Fish and Wildlife Service, Federal Wildlife Permit Office, Washington, D.C. 20240.

ginseng (*Panax quinquefolius*).

In a previous notice on this subject (F.R. 4/5/82), the Service invited comments on new proposed export guidelines, as well as information on the species listed above—including the bobcat (*Lynx rufus*). On the basis of the comments received, the Service concluded that the new proposed guidelines are inappropriate for lynx, otter, and alligator and has decided to use guidelines developed in 1977 for export of these species. New guidelines will be used only for the export of bobcats (see accompanying article).

Because of the Service's decision to use previously developed guidelines (for all involved species except bobcat), information needs, to be used in developing both Scientific Authority (SA) and Management Authority (MA) findings, have been reduced from those outlined in the April 1982 notice. Specifically, the Service has eliminated requests for population estimates, numbers of ani-

World National Parks Congress 1982

"Protected Areas in a Changing World," will be the theme of the once-a-decade *World National Parks Congress* to be held in Bali, Indonesia, October 11–22, 1982. This congress will bring together 450 professionals involved in planning and managing protected areas to discuss the current state of their science, and to help design and promote an expanded role for protected areas in the process of social and economic development.

Hosted by the Government of Indonesia, the congress is sponsored by the International Union for the Conservation of Nature and Natural Resources (IUCN) and cosponsored by the United Nations Environment Programme (UNEP), Unesco, the Food and Agriculture Organization of the UN (FAO), the World Wildlife Fund (WWF), the U.S. National Park Service, and Parks Canada. The Congress will produce three state-of-the-art books in workshop sessions: *Managing Protected Areas in the Tropics*; *Managing Coastal and Marine Protected Areas*; and *Training Protected Area Personnel*. A proceedings volume will be produced.

The views of the congress participants regarding world governments' role in supporting social and economic development will be communicated to all governments of the world in the form of the Bali Declaration. The congress will call for greater government and public support in this effort.

mals bought by dealers, number of licensed trappers, and prices paid to trappers for pelts. Required information is detailed in the August notice.

For ginseng, the Service is using the same guidelines as were used last year in determining if exports will not be detrimental to the survival of the species. Because the status of wild ginseng does not vary greatly from year to year within any given State, the Service proposed to issue findings valid for a 3-year period. The Service will continue to monitor the status of ginseng each year, maintaining the option to revise the findings at any time if new information shows a need to do so.

The Service proposed to approve exports of the following species harvested during the 1982–83 season for animals and the 1982 through 1984 seasons for ginseng in the following States, on the grounds that both SA and MA guidelines are expected to be met:

Lynx—Alaska, Idaho, Minnesota, Montana, and Washington.

River otter—Alabama, Alaska, Arkansas, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, New Hampshire, New York, North Carolina, Oregon, South Carolina, Vermont, Virginia, Washington, and Wisconsin.

Alaskan gray wolf—Alaska.

Alaskan brown bear—Alaska.

American alligator—Florida and Louisiana.

American ginseng—Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Minnesota, Missouri, North Carolina, Ohio, Tennessee, Vermont (artificially propagated ginseng only), Virginia, West Virginia, and Wisconsin.

Exports of CITES Appendix II animals or plants can only be authorized if the MA is satisfied that the species were not obtained in contravention of laws for their protection and if the SA advises that export will not be detrimental to the survival of the species. Tagging requirements for the 1982–83 season are detailed in the August notice.

REGIONAL BRIEFS

Continued from page 2

San Bernardino dusky shrew (*Sorex monticolus parvidens*), Santa Catalina shrew (*Sorex ornatus willetti*), and the Suisun shrew (*Sorex ornatus sinuosus*). Although the present population status is unknown, all three have extremely reduced ranges with continuing habitat modification and the continued existence of all three shrews is in doubt.

Region 2—The New Mexico Game and Fish Department, under contract to the Service, has completed a survey of the Pecos River in search of the blunt-

Continued on page 11

REGIONAL BRIEFS

Continued from page 10

nose shiner (*Notropis simus*). This minnow is believed to have been extirpated from the Rio Grande, but 2 years ago a new subspecies (*N. s. pecosensis*) was identified in one of its tributaries, the Pecos. The new survey indicates that the subspecies is still extant in the Pecos, but that it is jeopardized by both pollution and loss of water for irrigation and other uses. For this reason, the State has recommended designating the fish as Threatened and Region 2 has nearly completed a proposed listing package.

A recent stock analysis at Dexter National Fish Hatchery has found that the Amistad gambusia (*Gambusia amistadensis*) no longer exists at that facility and, in fact, may never have existed there. This suggests the possibility that the species is extinct. It was declared extinct in the wild several years ago after construction of the Amistad Reservoir destroyed its natural habitat, and it now appears that both captive populations (Dexter and the University of Texas at Austin) are also lost.

The masked bobwhite (*Colinus virginianus ridgwayi*) summer call count results in Arizona and Mexico were discouraging. On Buenos Aires Ranch in Arizona, the only place in the U.S. where attempts have been made to reestablish the jeopardized quail, habitat conditions have deteriorated due to heavy grazing. The Service is contracting with the Arizona Game and Fish Department to complete a study searching for suitable release sites within the State. In cooperation with the Mexican government, 1034 masked bobwhite chicks were released at two sites in northern Mexico within the bird's historic range. Releases in Mexico during 2 previous years may have succeeded in establishing one small population.

Beginning with fiscal year 1983, Ecological Services field offices will have primary Section 7 consultation responsibilities in Region 2.

Region 3—Regional personnel assisted in the Aleutian Canada goose transfer (see Region 7 news) as the birds were shipped through the Minneapolis Airport, caring for the geese until they were ready to resume their journey and helping them make their connecting flight.

The region has also assisted the U.S. Army Corps of Engineers in developing an agreement with Wisconsin for the State to act on behalf of the Corps in processing "Section 404" permits.

Region 4—Dr. Arthur H. Clarke, contractor for the Tar River spiny mussel status survey, has recently found an individual of this mussel (*Canthyria* sp.), which was believed extinct. Clarke

found the mussel in the Tar River, North Carolina, near the site of the species' original discovery.

Region 5—As part of the Massachusetts bald eagle (*Haliaeetus leucocephalus*) hacking project, two birds were fitted with small radio-transmitters for monitoring of their movements. After both birds began flying, one went north into Ontario, Canada, where its signal was lost; the other was still near the release site as of early September.

Endangered species biologist Martha Tacha, of the Annapolis Ecological Services Office, is working on a Memorandum of Understanding with the National Zoo in Washington, D.C., to conserve the single known habitat of the Hay's spring amphipod (*Stygobromus hayii*). The agreement should be signed sometime in September 1982.

West Virginia has signed an Endangered Species Cooperative Agreement, which should be received in the Region 5 office shortly.

Region 6—The final Colorado River Fishery Project report has been completed. The three-volume report consists of a Summary Report (Part 1) which synthesizes and analyzes Field Investigations (Part 2) and Contracted Studies (Part 3). Although Colorado squawfish (*Ptychocheilus lucius*) appear widespread throughout the Upper Colorado River Basin, they are not concentrated in large numbers in any one location. A 66 percent decline in juvenile and adult Colorado squawfish has been calculated for the period between 1960 and 1980, while the decline of young-of-the-year squawfish appears even greater and numbers may still be declining. As spawning areas seem limited, the life stages of greatest concern are those from spawning through the first year. If adequate spawning and rearing areas are not located and maintained, stocking programs will be required to insure the continued existence of the species. Extensive movement of Colorado squawfish between mainstem rivers and tributaries has been documented, with some individuals traveling over 200 miles. A Colorado squawfish spawning site was confirmed in the Yampa River. Thus, it appears blockage of such migration routes may have significant impact on the species.

Humpback chubs (*Gila cypha*) are found primarily in four locations (Black Rocks, Westwater Canyon, and Gray Canyon in the Upper Colorado River Basin, and the Little Colorado River in the Lower Colorado River Basin). All but the Gray Canyon population appear to be stable at this time. It does not appear that present flow depletions and regulations are significant limiting factors to the humpback chub in the Upper Colorado River; however, hybridization with the roundtail chub (*Gila robusta*) has

been documented, a factor which may be related to alteration in flow and/or temperature.

Humpback chubs have demonstrated a need for temperatures of at least 16–18°C to spawn and have eggs hatch. Populations in Black Rocks, Westwater Canyon, and the Little Colorado River should be considered relatively secure, barring significant alteration in their habitat. However, the Gray Canyon population in the Green River seems to be decreasing rapidly and will require intensive management if it is to be maintained.

Few bonytail chub (*Gila elegans*) still exist in the Upper Basin. Individuals were found in Gray Canyon; however, the largest existing population is found in Lake Mohave in the Lower Basin. It appears doubtful that the bonytail will survive without intensive management.

Limited copies of the report are available through the Regional Director, Bureau of Reclamation, Upper Colorado Region, P.O. Box 11568, Salt Lake City, Utah 84147.

Region 7—On the recommendation of the Aleutian Canada Goose Recovery Team, all flight-capable Aleutian geese (*Branta canadensis leucopareia*) being held at the Northern Prairie Wildlife Research Center were shipped to Alaska and released on Agattu Island this August. Mortality of geese during the 48-hour journey was low, and the 291 geese released appeared to be in excellent condition. Concurrently, a team of five Service biologists and three volunteers on Buldir Island captured 140 wild Aleutian geese which were also released on Agattu. This trap-and-transplant procedure will be the basis for future efforts to reestablish breeding colonies of Aleutian geese on islands from which they were extirpated by introduced Arctic foxes.

All the geese released or transplanted were banded with blue leg bands marked with white letters or numerals. Fall migration is fast approaching, and sightings of the marked geese in their California and Oregon wintering grounds will soon provide a measure of the success of the release effort.

Preliminary results from this summer's peregrine falcon survey and banding efforts in Alaska are as follows: for *Falco peregrinus anatum*, 87 nesting attempts were recorded; 158 total young were observed for a production ratio of 1.8 young per nesting attempt; and 140 nestlings were banded. For *F. p. tundrius*, 37 nesting attempts were recorded; 64 total young were observed for a production ratio of 1.7 young per nesting attempt; and 60 nestlings were banded. Blood samples for pesticide analysis were taken from 15 of 17 adult peregrines trapped; eight of the 17 had been banded previously.

New Publications

Limited copies of the "Report of Freshwater Mollusks Workshop—19–20 May 1981," by Andrew C. Miller (Compiler), U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi 39180, are available. To request a copy, write to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240. The report summarizes the objectives and status of a 2-year Corps effort to collect information on sampling methodologies, biological and ecological requirements, and habitat creation for selected common and federally listed Endangered mollusks. It was published in May 1982.

The annual report on the Service's administration of eight marine mammals for which it is responsible under the Marine Mammal Protection Act is now available. Marine species under the Service's jurisdiction are polar bears, sea and marine otters, walruses, manatees (three species), and dugongs. Administrative actions discussed in this report include those affecting Endangered and Threatened species (specifically the West Indian Manatee in Florida and the sea otter in California). Single copies of the report, which covers the period January 1, 1981, to December 31, 1981, may be requested by writing the Director (PUB), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Copies of *Hiker Traffic on and near the Habitat of Robbins Cinquefoil, an Endangered Plant Species*, Station Bulletin 522, June 1982, are now available. Request copies by writing Dr. G. E. Crow, New Hampshire Agricultural Experiment Station, University of New Hampshire, Durham, New Hampshire 03824. (This publication reports on activity observed during summer 1980.

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	18	223	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Claims	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	55	2	0	8	1	2	68
TOTAL	197	44	444	46	7	24	762

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 5 animals
6 plants

Number of Critical Habitats listed: 52

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 57

Number of Cooperative Agreements signed with States:

38 fish & wildlife

11 plants

September 10, 1982

The reports included in the August 1982 BULLETIN covered activity observed in 1981.)

Endangered, Threatened and Sensitive Vascular Plants of Washington, compiled by the Washington Natural Heritage Program and published June 1982 is now available. Copies may be obtained from the Washington Natural Heritage Program, Department of Natural Resources, 3111 Seminar Bldg. (SE 3109), The Evergreen State College, Olympia, Washington 98505. Please send \$1.00 to cover the postage, and make checks payable to the Department of Natural Resources.

An illustrated poster of all U.S. Endangered and Threatened animals and plants is now available for \$3.95 (quantity discounts available) from Learning Posters, 530 University Avenue, Palo Alto, California 94301. The 22-by-34-inch poster is two-sided and full-color. The side devoted to plants contains pictures of all listed U.S. plants—botanical illustrations by Kirk Caldwell—along with brief descriptions of the plants. The reverse side of the poster includes Carlos Marchiori paintings of 14 listed animals, a chart of all listed animals, and notes about habitat and physical characteristics of many of the species.

September 1982

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Borax Lake Chub Given Final Protection

The Borax Lake chub (*Gila boraxobius*) has been listed by the Service as an Endangered species, and the small area in which it occurs has been designated as Critical Habitat (F.R. 10/5/82). Without this protection, geothermal drilling in the immediate vicinity of the fish's restricted range and human modification of the lake itself could jeopardize the chub's survival by disrupting its fragile habitat. An earlier emergency listing, now expired, gave the fish and its habitat temporary protection from any immediate geothermal development threat, and the final rule allows conservation on a permanent basis.

Background

The Borax Lake chub was first collected in about 1940, and was described in 1980 (Jack E. Williams and Carl E. Bond, *Proceedings of the Biological Society of Washington*, 93(2), 1980, pp. 291-298). It is a dwarf species of *Gila*, with adults typically reaching a total length of only 38-55 mm, and it is the only member of that genus adapted to high water temperatures throughout the year. This fish is endemic to the Borax Lake area, an unusual aquatic ecosystem located in the high desert of the Alvord Basin, Harney County, southeastern Oregon. During the Pleistocene Epoch, the basin floor was covered by an extensive system of interconnecting lakes. As the region became very arid, the lakes dried and the aquatic organisms were isolated in the remaining springs and creeks, resulting in speciation in response to varying selective pressures within the distinct ecosystems. The Alvord chub (*Gila alvordensis*) also is restricted to the Alvord Basin but occurs in a number of springs and

creeks, and it is not found in Borax Lake.

The 640-acre area covered by the rule, consisting of 10-acre Borax Lake, Lower Borax Lake, and their associated marshlands, is fed by a series of thermal springs with waters high in dissolved mineral salts. Over thousands of years, sodium borate and other minerals have been deposited around the edges of Borax Lake, gradually raising the lake level to about 10 meters above the basin floor, and further isolating the chub from surrounding watershed. Borax Lake has been experiencing increased threats from human use. Its position—perched above its surroundings—makes it extremely susceptible to disturbance. In 1980, a modification of the lake perimeter and rechannelization of the outflow to divert water for irrigation slightly lowered the lake level. Reduced lake levels would affect the chub by decreasing the available habitat and increasing water temperatures.

A second and perhaps greater threat to the chub is geothermal development. The entire Alvord Basin is classified as a Known Geothermal Resource Area

within which the Bureau of Land Management (BLM) has already leased rights to a private energy development company for exploratory drilling. Such development could severely alter the species' habitat. Because of the possibility of interconnecting aquifers and spring sources, drilling near the lake could alter the underground water system and, in effect, drain the lake (which is at a higher level than most potential drilling sites). Not only could water levels be reduced, or even eliminated, but water pressures and temperatures could be altered. These threats first reached a critical stage in 1980, leading to the emergency listing.

Regulatory History

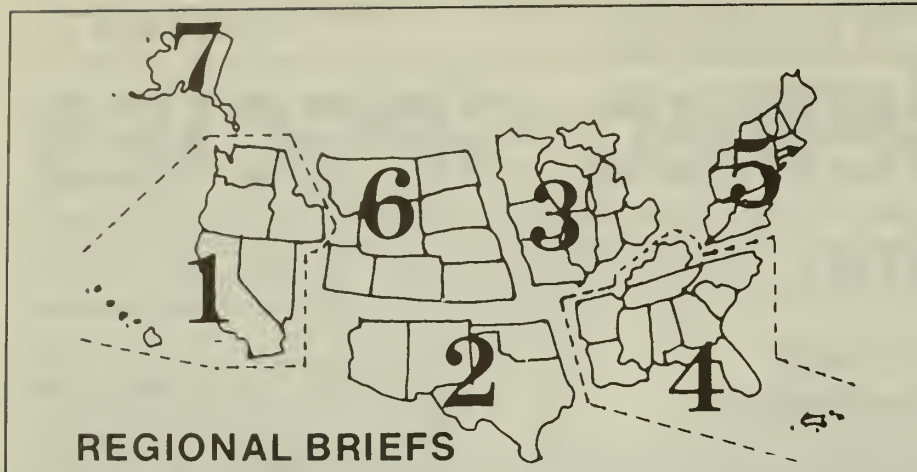
On May 25, 1980, the Service issued its emergency rule designating the chub as Endangered and determining its Critical Habitat. The Critical Habitat was drawn to include Lower Borax Lake and adjacent marshlands because the chub has been known to occur periodically in these areas and because terrestrial insects dependent on these wetlands make up a significant portion of the chub's diet. Although Borax Lake proper is privately owned, most of the affected area is public land administered by BLM.

Continued on page 4

"The Endangered Species Act Amendments of 1982" were signed by President Reagan on October 13th. The amendments, which affect all major portions of the 1973 Act, will receive feature coverage in the November BULLETIN.



Sodium borate deposits developed from the evaporation of borax-laden water from the Borax Lake are shown in the foreground. The deposits have formed over several thousands of years.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of September:

Region 1 — Two peregrine falcons (*Falco peregrinus*) which were banded in the late spring of 1981 in California have been recovered. One falcon with an injured wing was found near Lewiston

Reservoir in Shasta County in early September, not far from where it was banded in Humboldt County. This bird is presently being rehabilitated at the Santa Cruz Predatory Bird Research Group Lab. The second falcon, banded near Leggett, California, was killed in the State of Sonora, Mexico, in January

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

The *ENDANGERED SPECIES TECHNICAL BULLETIN* is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

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1982. This documents for the first time that a California peregrine falcon has migrated to Mexico where organochlorine pesticides are still in widespread use.

The results of peregrine falcon hacking attempt in the Northwest (Oregon and Washington) have not been good for 1982. This was the first year efforts were made to hack falcons in the State of Washington. A total of six chicks were hacked from two sites (see August and September 1982 *BULLETINS*). Four were believed to have fallen to natural predators, more likely the great horned owl (*Bubo virginianus*). The remaining two may have successfully fledged, but faulty radio transmitters did not allow close surveillance.

Region 2 — A study is being initiated on Aransas National Wildlife Refuge to evaluate the potential of the refuge uplands to support whooping cranes (*Grus americana*) and the effects of prescribed burning and grazing upon this habitat.

Nearly 15,000 razorback suckers (*Xyrauchen texanus*) were stocked in the Verde River in Arizona as part of the continued reintroduction effort for this species. A series of contracts was let to the Arizona Department of Game and Fish to 1) study potential reintroduction sites for the Colorado River squawfish (*Ptychocheilus lucius*) and woundfin (*Plagopterus argentissimus*), 2) conduct a status survey for the Little Colorado spinedace (*Lepidomeda vittata*), and 3) initiate a radio-tagging study of Sonoran pronghorns (*Antilocapra americana sonoriensis*).

Surveys for black-footed ferrets (*Mustella nigripes*) were conducted on the Jicarilla Indian Reservation and on some BLM lands in New Mexico. Encouraging ferret signs were found on the Jicarilla Reservation.

A bald eagle (*Haliaeetus leucocephalus*) nest constructed near Horseshoe Reservoir in Arizona was elevated on an artificial platform so that rising reservoir waters would not inundate the nest this year.

Region 3 — Endangered Species Specialist James Engel recently attended an annual meeting on natural areas in which concern was voiced about conservation of the Driftless Area. This is an unusual region made up of parts of Minnesota, Wisconsin, Iowa, and Illinois that escaped the effects of glaciation and contains a number of relict species that originated in the Pleistocene Epoch. Among the area's vulnerable species are the Iowa pleistocene snail (*Discus macclintocki*) and the northern wild monkshood (*Aconitum noveboracense*).

Region 3 recently hosted an Eastern Peregrine Falcon Recovery Team meeting. Forest Service representatives

Continued on page 7

Pine Barrens Treefrog Proposed Delisting

The Service has proposed to remove the Florida population of Pine Barrens treefrog (*Hyla andersonii*) from the U.S. List of Endangered and Threatened Wildlife and Plants and to rescind the Critical Habitat that has been designated for this population (F.R. 9/15/82). Recent evidence indicates that the frog is much more widely distributed than originally known.

Background

When the treefrog was listed as Endangered (F.R. 11/11/77), the only known existing breeding sites were limited to seven small areas in Okaloosa County, and the population was thought to total less than 500 individuals. However, data now available expand the Florida distribution to a total of at least 119 sites in Okaloosa, Walton, Santa Rosa, and Holmes Counties.

In the spring of 1978, the Florida Game and Fresh Water Fish Commission (FGFWFC) began a project to better assess habitat needs and distribution limits of the treefrog within Florida. Surveys conducted during 1978 and 1979 revealed a number of new populations. Because of the more widespread distribution of the treefrog, the Service contracted with FGFWFC in December 1979 to develop recommendations regarding possible reclassification. The report subsequently transmitted to the Service in January 1980 titled "The Florida Population of the Pine Barrens Treefrog (*Hyla andersonii*), A Status Review," recommended that the frog be removed from the Federal list.

During the Florida surveys, incidental investigations were conducted in nearby Alabama areas revealing six other sites in Escambia and Covington counties where the treefrog is established. A 1980 survey of southern Alabama turned up an additional 16 populations in the Geneva-Escambia-Covington County areas. Knowledge of these Alabama populations provides further evidence of the treefrog's overall well-being in what is essentially a single Florida-Alabama population unit that is much larger than originally suspected.

Although the frog appears to be limited to only four counties in Florida, it is of widespread occurrence within this area. In addition, a considerable amount of habitat which is very likely to harbor the frog has not yet been investigated. These two factors suggest that the Flor-

Service Conducts 5-Year Review

The Service has initiated a review of animals and plants listed during 1977 to insure that the species' most current status is accurately reflected by the Endangered or Threatened classification now assigned them under the Endangered Species Act of 1973, as amended (F.R. 9/27/82). The Act requires the Service to conduct a review of all listed species at least once every 5 years.

The public, other concerned governmental agencies, the scientific community, industry, and any other interested parties are invited to submit comments on the status of the species listed below. These comments must be in writing and should contain the name, signature, telephone number, and the association, institution, or business, if any, of the party. Comments must be received by the Service by 1/25/83.

The Service will acknowledge in writing all comments received. If, as a result of this review, any present classifications as Endangered or Threatened are found to be inconsistent with current evidence, the Service will propose the appropriate changes of classification.

Submit comments to Regional Director (FA), U.S. Fish and Wildlife Service, Suite 1692, Lloyd 500 Building, 500 N.E. Multnomah Street, Portland, Oregon 97232 (species 1, 2, 3, 4, 6, 17, 18, 19, 20) or Regional Director (FA), U.S. Fish and Wildlife Service, Richard B. Russell Fed-

eral Building, 75 Spring Street, S.W., Atlanta, Georgia 30303 (species 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16).

Species Under Review:

1. Otter, southern sea, *Enhydra lutris nereis*; 2. Mallard, Marianas, *Anas oustaleti*; 3. Shrike, San Clemente loggerhead, *Lanius ludovicianus mearnsi*; 4. Sparrow, San Clemente sage, *Amphispiza belli clementeae*; 5. Anole, Culebra giant, *Anolis roosevelti*; 6. Lizard, Island night, *Klauberina riversiana*; 7. Lizard, St. Croix ground, *Ameiva polops*; 8. Snake, Atlantic salt marsh, *Nerodia fasciata*; 9. Coqui, golden, *Eleutherodactylus jasper*; 10. Treefrog, pine barrens, *Hyla andersonii*; 11. Cavefish, Alabama, *Speoplatyrhinus poulsoni*; 12. Chub, slender, *Hybopsis cahnii*; 13. Chub, spotfin, *Hybopsis monacha*; 14. Darter, slackwater, *Etheostoma boschungii*; 15. Madtom, yellowfin, *Noturus flavipinnis*; 16. Riffle shell clam, tan, *Epioblasma walkeri*; 17. Fabaceae-Pea family, *Lotus dendroideus* (= *scoparius*) ssp. *traskiae*, San Clemente Island broom; 18. Malvaceae-Mallow family, *Malacothamnus clementinus*, San Clemente Island bush-mallow; 19. Ranunculaceae-Buttercup family, *Delphinium kinkiense*, San Clemente Island larkspur; 20. Scrophulariaceae-Snapdragon family, *Castilleja grisea*, San Clemente Island Indian paintbrush.

ida population is relatively secure for the immediate future.

Threats to the Species

The final rule listing the treefrog as Endangered (F.R. 11/11/77) indicated that development and land clearing for agricultural use had destroyed four of the 11 known population sites within the 7-year period following the frog's discovery. The most recent data do not substantiate such a severe trend in habitat loss.

Of the 112 new habitat sites surveyed by FGFWFC between May 1978 and June 1980, four had been degraded to some degree by siltation or runoff, but still supported frogs. Fifteen of the localities were within or adjacent to clear-cut areas, but there was no immediate evidence of adverse effects to the frog population.

To date, drainage of bogs for agricultural or silvicultural purposes has not been extensively practiced within the Florida range. Some of the Pine Barren treefrog's habitat has likely been lost through the creation of artificial lakes

and ponds within the bog areas. Man-made impoundments are common throughout the treefrog's Florida range, and new impoundments will likely continue to pose at least a minor threat.

Many of the subclimax communities, herb bog and shrub habitats required by the Pine Barrens treefrog have apparently disappeared during the last several centuries as the result of wildfires being suppressed or limited through human activity. However, some evidence suggests that other disturbance factors may be suitable substitutes for fire. Clear-cutting, such as may occur with the construction and maintenance of electric and gas transmission lines, increases groundwater seepage by reducing evapotranspiration, thus contributing to the formation of herb bogs. Numerous populations were found along such transmission lines during the 1978-1980 surveys.

Comments concerning this proposal should be sent by November 15, 1982, to the Regional Director (ARD/FA), U.S. Fish and Wildlife Service, 75 Spring Street, S.W. Atlanta, Georgia 30303.

Madison Cave Isopod Listed as Threatened

The Madison Cave isopod (*Antrolana lira*) has been listed by the Service as a Threatened species (F.R. 10/4/82). This small freshwater crustacean, which is restricted to a single cave and an adjoining fissure, is jeopardized by vandalism, habitat damage from unauthorized visitors, and mercury pollution.

Background

The earliest known collection of the Madison Cave isopod was made in 1958 by Dr. Thomas Barr of the University of Kentucky, and the species was described in 1964 (*International Journal of Speleology*, Vol. 1, pp. 229-236 and plates) by Dr. Thomas E. Bowman of the Smithsonian Institution. Not only is this species the only member of its genus, but also the only freshwater representative of its family (*Cirolanidae*) north of Texas. The isopod is about 12 mm in length and, like some other cave-dwelling creatures, lacks pigment and eyes. It has been found only in three small pools of water in Augusta County, Virginia. Two of these pools are in Madison Cave, and the other is in a nearby fissure.

One threat to the isopod is unauthorized human visitation to the cave, which has resulted in trash accumulation and siltation in the pools. A recent study has also found that persons standing on the steep talus banks cause the clay talus to creep down into the pools. These factors are reducing the size and quality of the isopod's very limited habitat. The species also is exposed to mercury contamination from the nearby South River, which apparently is connected with the

cave by a subterranean stream. Although the chemical factory that was the source of the pollution is no longer active, the mercury, a heavy metal, persists in the river sediment and is being slowly released into the water.

The Madison Cave isopod was first proposed as a Threatened species in 1977. In accordance with the listing deadline imposed by the Endangered Species Act Amendments of 1978, the proposal was withdrawn in 1979. Based on significant new information about threats to the isopod, it was repropoed as Threatened on October 6, 1980. During the subsequent public comment period, no position on the proposal was taken by the State of Virginia. Comments from the U.S. Army Corps of Engineers stated that it has no current projects in the Madison Cave area, and that the effect of a potential project, the Verona Dam and Lake, would be investigated should studies on that facility be reactivated. In its response, the Service added that any detrimental effects of the project, if reactivated, would be unlikely. Comments in support of the listing were received from Dr. John R. Holsinger of Old Dominion University and Dr. Thomas E. Bowman of the National Museum of Natural History. Additionally, a 1982 ecological study of the isopod by T.L. Collins added much to the knowledge of the species and confirmed the threats to its continued existence.

Critical Habitat was not designated for the isopod because publication of a map of its extremely restricted distribution would add to the danger of vandalism. Nevertheless, the habitat conservation measures outlined in Section 7 of the Act do apply. Federal agencies now are required to insure that any actions they authorize, fund, or carry out will not likely jeopardize the continued existence of the Madison Cave isopod.



The Madison Cave isopod, a small freshwater crustacean, is restricted to a single cave and an adjoining fissure in Augusta County, Virginia.

Photo by Christopher P. White

BORAX LAKE CHUB

Continued from page 1

During the 240-day life of the emergency rule, consultations with the BLM on geothermal exploratory drilling were initiated pursuant to Section 7 of the Endangered Species Act. As part of the BLM leasing process, the Anadarko Production Company, the lease holder around Borax Lake, agreed to a lake monitoring program. The company also agreed to a stipulation that any change in the water quality or quantity of Borax Lake caused by its drilling would result in suspension of operations until the problem is identified and resolved.

In order to insure continued conservation of the chub and its habitat, the Service proposed a final listing and Critical Habitat rule on October 16, 1980. Fourteen written comments were received in response to the proposal. The Governor of Oregon, the Oregon Department of Fish and Wildlife, and the BLM generally supported the proposed listing, as did two local conservation organizations and five individuals.

Concern about the potential affect of a Critical Habitat determination on geothermal development was voiced by Anadarko, the local chamber of commerce, and the Harney County court. Only one of those responding, an individual, expressed outright opposition, again out of concern about possible restrictions of geothermal drilling. A public meeting on the proposal was held in Burns, Oregon, on November 13, 1980. At a subsequent public hearing on December 2, 1980, also at Burns, comments similar to the written responses were received.

Effects of the Rule

After analysis of the available scientific data, economic information, and responses to the proposed rule, the Service designated the Borax Lake chub an Endangered species and determined a 640-acre area (including Borax Lake, Lower Borax Lake, and their adjacent marshes) Critical Habitat. All Provisions of 50 CRF 17.21 and 17.23 now apply, including the prohibitions on taking the species and on interstate or international commerce. There are many kinds of actions that can be carried out within the Critical Habitat of the Borax Lake chub without adverse effects, and indeed no activity is automatically excluded.

Under the existing monitoring program and geothermal leasing provisions formulated in 1980, the Service foresees no significant impact of the listing rule on geothermal explorations. Anadarko has already voluntarily delineated a zone slightly larger than the Critical Habitat within which it does not plan to drill.

Foreign Species Proposal Expires

A 1980 rulemaking which proposes as Endangered the U.S. population of the thick-billed parrot (*Rhynchopsitta pachyrynchus*), shorttailed albatross (*Diomedea albatrus*), margay cat (*Felis wiedii*), and jaguar (*Panthera onca*) has been withdrawn by the Service F.R. (9/17/82). The 2-year time limit for proposed rulemakings, mandated by the 1978 amendments to the Endangered Species Act of 1973, has expired for this proposal.

The listing of the U.S. population of the ocelot (*Felis pardalis*), which was proposed at the same time as the above species, was finalized on July 21, 1982. (See the August 1982 BULLETIN for details.) Foreign populations of all five species are listed under the Act as Endangered.

Puerto Rican Parrot Recovery Program Shows Progress

by James W. Wiley
Patuxent Wildlife Research Center,
Puerto Rico Field Station

Although the wild population is still precariously close to extinction, several developments from research on captive productivity and increasing wild nesting success have been encouraging in the effort to recover the critically Endangered Puerto Rican parrot (*Amazona vittata*). The research is a cooperative program with the U.S. Forest Service (USFS), and is being conducted within Patuxent's Endangered Species Ecology Section and the USFS Institute of Tropical Forestry.

From an all-time low of 13 birds in 1975, the wild population has shown a low but substantial increase in numbers. In 1980, 8 chicks fledged from 3 nests, and in 1981, a program (1968 to present) record of 10 chicks fledged from 3 nests, for a minimum wild population of 29 birds in July 1982. Yet, despite improved nest success and productivity of parrot pairs, the numbers of breeding pairs in the wild has not shown the expected rate of growth, apparently because of losses of subadult birds. The poor survivorship of non-breeding birds is believed primarily the result of predation by raptors such as the red-tailed hawk (*Buteo jamaicensis*) and wintering peregrine falcon (*Falco peregrinus*). Most mortality apparently occurs in the first year. Breeding adult parrot survival has been very good, and none have been lost since 1976 while two new pairs have been recruited into the breeding population.

All parrot pairs are using improved natural or artificial nest sites designed to discourage pearly-eyed thrashers (*Myiadestes fuscatus*) from entering the nests. Thrashers are provided with their own nest sites, of sizes and dimensions more to their preferences, near the parrot nests. By defending its own nest territory, a resident thrasher effectively keeps other thrashers away. Although they formerly were the most critical problem affecting parrot nesting success, thrashers are not currently a serious threat.

Twice we have recorded wild Puerto Rican parrots producing replacement clutches when their first set of eggs failed. Based on this and experiments with captive Puerto Rican and similar, non-listed Hispaniolan (*A. ventralis*) parrots, an attempt was made to artificially "double-clutch" a wild pair in 1980. The female had been laying nonviable

thin-shelled eggs for several years. We transferred each of the thin-shelled eggs to the field station incubator as they were laid, and replaced them with plaster dummies. Once the female completed her clutch, the dummies were removed in the hope that she would replace them with a second clutch. She did lay an additional two fertile eggs and, although the eggs failed to hatch, the double-clutching technique does show good potential for increasing wild production.

Progress with Captive Production

The recovery effort for the wild Puerto Rican parrot population is closely associated with the captive propagation program at the Puerto Rico Field Station in the Luquillo Forest. Along with serving as insurance against loss of the species by disease or natural disasters, the captives are being used to bolster the wild population. The captive flock now stands at 15 birds, composed of 6 males, 8 females, and 1 chick (sex undetermined). Two of the five pairs have produced fertile eggs; five chicks have been produced at the aviary, and four of these have been fostered into wild nests. Fostering is the best strategy for achieving success in getting captive-produced chicks into the wild, as they will closely associate with the foster parents for an extended post-fledging dependency and learning period.

In 1979, the first captive-produced chick fledged from a wild nest after the foster parents failed to produce chicks of their own. The next year, two captive-produced chicks were fostered into that nest after all of the wild pair's eggs again failed to hatch. In 1981, one captive-produced nestling was fostered into a different nest already containing chicks of its own. Although we have found it best to place chicks when they are less than one-quarter grown, the 1981 chick could not be slipped into the nest until it was half-grown because of situations requiring our attention at other nests. As it had been hand-raised in a brooder, the youngster initially had some difficulty in learning to take food from its foster parents. For a while, we had to remove it from the nest at least once daily for supplemental feeding but the chick was eventually weaned from our care and it fledged along with its foster siblings.

To test whether wild pairs can adequately raise an additional chick, we have twice artificially increased the normal brood of three chicks to four. In both cases, the additional chick was accepted and all young showed excellent growth rates and fledged successfully. Further experiments may reveal that brood sizes can be further increased.

Use of Surrogates

A flock of 28 Hispaniolan parrots is also being maintained at the field station aviary, and these birds have proven themselves invaluable as surrogates. For example, they have raised captive-produced Puerto Rican parrot eggs and chicks where the adults were being double-clutched or had rejected their eggs. Eggs and chicks salvaged from some wild nests where they were jeopardized by storms, predation, or other factors also have been fostered under captive Hispaniolans. These birds are able to do a more reliable job of incubating and brooding than we can achieve with mechanical devices. The surrogate parents are also more efficient in raising nestlings, as we have to feed the chicks hourly around the clock to achieve the growth rates desired. (Fostering chicks under surrogates saves wear and tear on biologists, too). Hispaniolan parents also serve to "train" young Puerto Rican parrot chicks before they are fostered into wild nests. If these chicks are placed directly into wild nests after hand-raising, they will sometimes be intimidated by the presence of other young birds in the nest and by the adults' presence. An intermediate period with a Hispaniolan parrot gives the hand-raised chick some preparation for its new environment.

Some first-time Puerto Rican parrot parents have been extremely clumsy or awkward with their eggs and chicks, and we have not trusted them with their own offspring. Instead, we have used Hispaniolan chicks and eggs to "train" adult Puerto Rican pairs in the skills required to care for their progeny. After proving themselves, Puerto Rican adults have been allowed to raise chicks of their own species. The surrogate species has served as a "stand-in" at wild nests, too. In situations we judge too dangerous to leave a Puerto Rican parrot chick in a wild nest, we substitute a Hispaniolan parrot of appropriate age until the threat has been eliminated. In one wild nest, the nonviable eggs were far overdue for hatching and the female was about to desert when we fostered a just-hatched Hispaniolan chick into the nest. The female immediately settled into the task of raising the chick. We could not have afforded to chance this switch with a more valuable Puerto Rican chick, as the risk in leaving the nestling in a poorly

Continued on page 6

PARROT

Continued from page 5

attended nest at that age would be far too great. At an appropriate age, we replaced the Hispaniolan with a Puerto Rican parrot chick.

Increased Egg Production

Double-clutching to increase egg production has been successful with both species. In 1981, an experiment with Hispaniolan parrots suggested that sequential removal of eggs could increase production substantially above that obtained by whole clutch removal. By removing the entire clutch at once, we have twice been able to get a total of nine eggs (five in first clutch, four in second) from one Hispaniolan female. But with a sequential removal of eggs from the same female, she laid 21 eggs before the experiment was stopped, of which 20 were fertile. An important aspect of this technique is that egg-laying birds can be synchronized with other breeding birds (wild or captive). If captive Puerto Rican parrots or Hispaniolan surrogates are started laying earlier than the wild population by stimulation through an artificial photoperiod regime, and if the eggs are removed as the females lay them, the captives are essentially held in "readiness" until the wild population begins to lay.

Once the removal of eggs ceases, the manipulated birds begin incubating. Chicks of appropriate ages can then be produced for fostering into wild nests either to serve as surrogates or to supplement wild Puerto Rican parrot production, and adult Hispaniolan parrots can be synchronized to receive captive

or wild-produced eggs and chicks. In the 1981 experiment, the female Hispaniolan parrot was allowed to incubate her last two eggs (numbers 20 and 21). She did so for 32 days, far beyond the normal 27-day incubation period for Hispaniolan parrots. This is particularly impressive because she had been laying eggs for over 2½ months before she was finally permitted to begin incubation.

Future Research Directions

Because the single wild population is vulnerable to tropical storms or disease, the reestablishment of other Puerto Rican parrot populations elsewhere on the island is essential to the survival of the species. Future research will focus on developing techniques for releasing free-flying birds. Captive-produced Hispaniolan parrots of several age classes will be released in an area of their native Dominican Republic where healthy populations still occur. Release techniques will be developed, and observations will be made on how the captive-raised birds integrate into wild flocks. Movement and survival will be monitored using small radio-transmitters, providing information vital in future introduction procedures for Puerto Rican parrots in the Luquillo Forest and other sites in Puerto Rico. The telemetry system will also aid in the study of post-fledging mortality of the Endangered parrots, another major research goal in the years ahead.

Additional information may be obtained by contacting Dr. John G. Rogers, Jr., Acting Director, Patuxent Wildlife Research Center, or Dr. H. Randolph Perry, Jr., Leader, Endangered Species Section (U.S. Fish and Wildlife Service, Laurel, Maryland 20708).

Plans Approved for Cavefish and Eagle

The Service's Director signed two recovery plans during September, bringing the total of approved recovery plans to 59. The Southwestern Bald Eagle Recovery Plan was signed on September 8 and the Alabama Cavefish Recovery Plan on September 17. Copies of these plans will be available in four to six months from the Denver Fish and Wildlife Reference Service, Unit i, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

The Southwestern Bald Eagle Recovery Plan presents recovery actions for the bald eagle (*Haliaeetus leucocephalus*) population included in Oklahoma, Texas west of the 100th meridian, all of New Mexico and Arizona, and that area of California bordering the Lower Colorado River. Prior to the mid-1970's, no data existed to document the population size or distribution of the eagle in this area. The conjecture that the eagle population was declining can only be inferred.

Presently, 13 breeding territories of the southwestern bald eagle are known and all contain varying expanses of mature streamside forests. Though the relationship is not fully understood, suitable riparian habitat appears to be an essential prerequisite to successful eagle reproduction.

The southwestern bald eagle reaches its greatest density in the Salt and Verde River systems of central Arizona where 12 of the 13 known breeding territories are found. It is estimated that 50 percent of the apparently suitable habitat in the Salt and Verde River systems is presently unoccupied. In addition, riparian forests and perennial streams in adjacent drainages appear suitable for nesting bald eagles. The recovery planners recommend that the southwestern bald eagle not be downlisted until the reproductive effort has been effectively doubled and the population range has expanded to include one or more of these river drainages in addition to the Salt and Verde systems.

Reproductive health of the southwestern bald eagle appears to be good, as evidenced by hatching success and low pesticide content of eggs. Most reproductive losses appear to be associated with accidental deaths of embryos and nestlings.

The recovery team proposes the following guidelines to recover the species: (1) Maintain and protect the existing nesting territories; (2) enhance nesting territories to increase the production of young above the present average of 1.02 fledglings per active nest; (3) continue using a production

Continued on page 7



Mutual preening in captive Puerto Rican parrots. Luquillo Forest, Puerto Rico.

CAVEFISH AND EAGLE

Continued from page 6

index and annual monitoring program to determine whether the population is increasing, decreasing, or stable; (4) identify, maintain, and improve wintering habitat; and (5) promote research that will lead to increased eagle survival.

Considering the extant breeding population, recovery team members and consultants consider artificial rearing of southwestern bald eagles to be unwarranted at this time. However, in the event of significant decline in reproductive success, the recovery plan recommends a contingency plan for artificial propagation.

For more information regarding the Southwestern Bald Eagle Recovery Plan, contact the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

The Alabama cavefish (*Speoplatyrhinus poulsoni*) is known from a single site, Key Cave in Lauderdale County, Alabama. It is the rarest of American cavefish and, probably, one of the rarest freshwater fish. It was described in 1974 on the basis of nine specimens from the type locality.

The Alabama cavefish's distribution is characteristic of relicts, occurring in a

limited area at the periphery of a broader family range. It is quite possible, based on superficial geological and hydrological grounds, however, that the fish does not exist in a single, isolated pocket, but is somewhat more widespread and more abundant than is currently known. Speological explorations and biospeological investigations of the limestone caves of northwestern Alabama have not been as extensive as those in the northeastern part of the State, so it is appropriate to anticipate the eventual discovery of additional *S. poulsoni* sites. Searching for additional sites of the Alabama cavefish is a primary strategy in planning the recovery of this fish.

The Alabama cavefish was described in 1974 [Copeia (2):486-493] by M.R. Cooper and R.A. Kuehne. It has a greatly flattened snout and no externally visible eyes. It ranges from 31.2 to 58.3 mm, but its maximum size is not known. The species has no obvious pigment and looks generally pinkish-white. The body covering, fins, fin rays, and elements of the cranial skeleton are quite transparent. The fish can be readily distinguished from other amblyopsid cavefishes.

Key cave is a large, multi-level maze, with two interconnected entrances. The entrances are on land administered by the Tennessee Valley Authority, but

much of the cave underlies land that is not within the Pickwick Reservation boundaries and is used for cotton farming. The cave is largely unexplored.

Algae, ferns, and a few other plants can be found at the entrances and twilight zones of the cave. Many guanobites can be found just beyond the twilight zones. Source of the guano is a large summer nursery colony of the Endangered gray bat (*Myotis grisescens*). Although the absolute importance of the gray bat to the ecology of the Alabama cavefish is unknown, it is certainly a primary biotic source of energy at Key Cave. Therefore, another provision of this recovery plan is to implement the Gray Bat Recovery Plan.

The first objective of the Alabama Cavefish Recovery Plan is to assess the status, distribution, ecology, and threats to the species in order to assess that the fish's needs for survival are known and met. A later objective is to consider removing it from the U.S. List of Endangered and Threatened Wildlife and Plants if conditions warrant.

For more information regarding the Alabama Cavefish Recovery Plan, contact the Regional Director, U.S. Fish and Wildlife Service, Richard B. Russell Federal Building, 75 Spring Street, S.W., Atlanta, Georgia 30303.

REGIONAL BRIEFS

Continued from page 2

reported sighting a banded peregrine (possibly an eastern) feeding on a pigeon outside their regional office building in Milwaukee, Wisconsin. There has also been a peregrine sighting recently in Iowa which, because of its location, might be one of the birds from the Minnesota release.

Region 4 — The Florida Game and Fresh Water Fish Commission has received 27 submissions for papers to be presented at the Red-cockaded Woodpecker Symposium to be held on January 27-28, 1983, at Panama City, Florida. The symposium is being cosponsored by the Fish and Wildlife Service and the Forest Service, and the State of Florida will serve as the host. Additional information and the agenda should be available in the near future. Those interested in attending should contact Don Wood, Division of Wildlife, Florida Game and Fresh Water Fish Commission, 620 South Meridian Street, Tallahassee, Florida 32301; telephone 904/488-3831.

Six additional specimens of the Tar River spiny mussel (*Canthyria* sp.) have been found in the Tar River, North Carolina, by Dr. Arthur H. Clarke, contractor for the status survey. These mussels were found within the original range for this species.

Region 5—Recovery plans for a number of listed species are progress-

ing, thanks to the work of cooperating offices and agencies. An agency review draft of the Chittenango Ovate Amber Snail Recovery Plan, prepared by the State of New York, has been received, and an agency draft of the Flat-spined Three-toothed Snail Recovery Plan has been prepared by Andy Moser of the Service's Annapolis (Maryland) Ecological Services Office.

Efforts to recover the Endangered Virginia roundleaf birch (*Betula uber*) are beginning to show signs for optimism. The remaining wild population has declined steadily to a critical level of five adults and several seedlings (see the April 1982 BULLETIN). In order to enhance natural regeneration, areas within the adult trees' zone of seed dispersal were "opened up" in 1981, exposing the soil and removing competing vegetation to increase the chances of *B. uber* seed germination and seedling establishment. Approximately 50 new *B. uber* seedlings recently were counted on one of the prepared areas.

Region 6 — In September, a Service botanist searched potential habitat in Utah around the type locality for the purple-spined hedgehog cactus (*Echinocereus englemannii* var. *purpureus*), an Endangered cactus. Since a sighting of this variety hasn't been documented since the original collection over 30 years ago, the first recovery task identified in the draft recovery plan was a search for the plant. Individuals were

found that fit the narrow definition of variety *purpureus*; however, these are intermixed on hillsides with individuals of *Echinocereus englemannii* var. *chrysocentrus*, a common variety occurring in Utah, Arizona, Nevada, and California. Individuals corresponding to var. *purpureus* represent at most only 5 percent of the *Echinocereus englemannii* plants in the vicinity of the type locality, with intermediate plants between the two varieties also present. Now that the first recovery task has been completed, we need to pursue the second recovery task, which is to determine the taxonomic distinctness of var. *purpureus*.

The Canadian Wildlife Service, the U.S. Fish and Wildlife Service, and involved States are again participating in a whooping crane (*Grus americana*) tracking program to determine what habitat is utilized by the migrating birds between Canada's Wood Buffalo National Park and Aransas National Wildlife Refuge in Texas. In fall 1981, a young-of-the-year whooper was successfully tracked throughout migration. Last spring, the bird migrated back to Wood Buffalo National Park, but unfortunately it was not tracked. The transmitter is still working, so the bird is being tracked again this fall. It will be interesting to see how closely its behavior parallels that exhibited last year.

Five young-of-the-year whoopers were fitted with transmitters early this

Continued on page 8

REGIONAL BRIEFS

Continued from page 7

year at Wood Buffalo National Park. Since then, two have been killed by wolves. It is hoped that at least one of the remaining young birds can be tracked along its entire migration route.

The Grizzly Bear/Wolf Technical Workshop was held on July 28-30, 1982, at Ford Station, Montana. Chris Servheen, Grizzly Bear Recovery Coordinator, served as chairperson for the meeting this year. Topics discussed included mapping grizzly bear (*Ursus arctos horribilis*) habitat, oil and gas activity in the Northern Rockies, wolf (*Canis lupus*) recovery and management, forest management practices, and limiting factors and monitoring of grizzly populations. The workshop was a success, with more than 140 individuals representing several agencies and institutions in attendance. A meeting of the Montana Bald Eagle Working Group preceded the workshop on July 27.

Region 7 — The revised Aleutian Canada Goose Recovery Plan has been approved and signed by Director Jantzen. It is being printed and should be available for distribution within 60 days.

During the 1982 field season, the Division of Endangered Species and Raptor Management Studies surveyed or contracted for surveys in seven areas within interior and Arctic Alaska for peregrine falcons and other raptors. Approximately 1,250 river miles were covered. In addition, three other areas within the same regions, consisting of roughly 600 river miles, were surveyed by the Bureau of Land Management. In the interior, 88 pairs of American peregrine falcons (*P. f. anatum*), 14 lone adults, and 160 young were observed. In the Arctic (*P. f. tundrius*) count, 37 pairs, 5 lone adults and 64 young were seen. A total of 200 young were banded statewide. The number of nesting pairs found in the

BOX SCORE OF SPECIES LISTINGS							
Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	18	223	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Claims	23	0	2	0	0	0	25
Crustaceans	2	0	0	1	0	0	3
Insects	7	0	0	4	2	0	13
Plants	55	2	0	8	1	2	68
TOTAL	197	44	444	47	7	24	763

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 4 animals
6 plants

Number of Critical Habitats listed: 52
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 59
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

October 4, 1982

interior was a few more than last year, but production was 20 percent less than in 1981. This decrease was probably a result of the late, colder than average spring experienced this year. For the Arctic peregrine falcon population, the number of pairs increased by 20 percent and production increased by roughly 50 percent.

Service personnel trapped 17 adult peregrines in 1982, 11 females and 6 males, and blood samples for pesticide analysis were taken. Eight of these birds were previously banded: two as adults last year and six as nestlings in 1979, 1980 and 1981. The two adults were breeding at the same cliffs they used in

1981. The second-year bird (a non-breeder) was occupying a cliff 3 miles from the cliff he fledged from last year. Three third-year birds and two older birds were breeding at cliffs up to 140 miles from the cliff where they fledged. One female, banded as a nestling on the Yukon River in 1979, was breeding on the Tanana River this year. At five cliffs where birds were trapped in both 1981 and 1982, five of the ten birds were different in 1982, three were the same, and two were unknown. If this trend continues, it would indicate either a much higher adult turnover rate or a much lower site fidelity than previously thought, or both.

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Technical Bulletin

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Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Technical Bulletin

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DEC 17 1982

President Signs Amendments To Endangered Species Act

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On Wednesday, October 13th, President Reagan signed "The Endangered Species Act Amendments of 1982," reauthorizing and further amending the Endangered Species Act of 1973. The Amendments specify shorter time periods to complete listing functions (Section 4) and the exemption process (Section 7), and they also affect other important provisions of the Act.

Listing Made More Efficient

Changes affecting the listing and delisting of species are intended to ensure that decisions in every phase of the processes are based *solely* upon biological criteria, and to prevent nonbiological considerations from affecting these processes. The legislative history accompanying the amendments specify that the economic considerations applying to Critical Habitat designations have no relevance to determinations regarding the status of species. The listing process has been streamlined by reducing the time periods for rulemaking, consolidating public meeting and hearing requirements, and providing for the separation of Critical Habitat designations from the listing process when appropriate.

After receiving a petition to list or delist, the Service must now act "to the maximum extent practicable" within a 90-day period, publishing a finding on whether or not the petition presents substantial scientific or commercial data to support the proposed action. The requirement to act on petitions within 90 days will be waived only in the event that devoting staff resources to petition responses would interfere with actions needed to list other species in greater need of protection. The amendments require that any selection of one action before another must be made on the basis of a scientifically based priority system to be published by the Service.

Within 12 months of receiving a "substantial" petition, the Service must publish a proposed rulemaking, determine

that the petitioned action is not warranted, or determine that the action is warranted but that other listing or delisting actions currently preclude undertaking new actions. In any case, notice of all findings must be published in the *Federal Register*. If the Service makes a negative judgment on any petition, the determination will be subject to judicial review.

The 12-month time period can be waived only if the Service is actually working and making progress on other listings and delistings. Delayed petitions are treated as if resubmitted and an additional year is allowed for the Service

to make its required determination. The Service's inability to propose an otherwise warranted petitioned species will be subject to judicial review. Petitions to revise Critical Habitat are not required to present economic information relevant to the proposed revision, and will be handled by the Service in the same manner as other petitions. The amendments also apply to now pending petitions.

Final action on listing, delisting, or Critical Habitat proposals must now be accomplished within 1 year, instead of 2 years as previously allowed. A 6-month

Continued on page 7

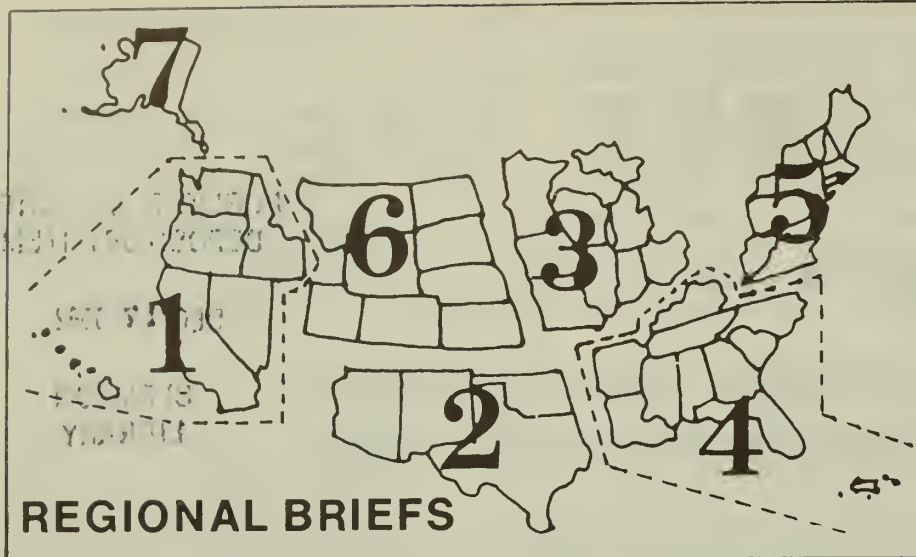
Important Condor Habitat Discovered By Radio Telemetry

A free-flying California condor (*Gymnogyps californianus*) was captured for the first time by the Service on October 12 in the mountains northeast of Ventura, California. As authorized by the California Fish and Game Commission, biologists with the Condor Research Center have been attempting to trap a prospective mate for Topa Topa, a male condor at the Los Angeles Zoo. The condor was netted as it fed on a calf carcass, and was held near the site while a blood sample was rushed to the San Diego Zoo for a chromosome analysis to determine the bird's sex. When the condor proved to be a male, it was fitted with two small (approximately 40-gram), solar-powered radio transmitters attached at each patagium along with two relatively inconspicuous numbered tags for visual identification, and released nearby.

Telemetry data gained since the bird's release have already provided valuable information on previously unknown condor habitat. The condor has shown no apparent reaction to the tags or transmitters. It remained in the release

area for several days and was observed feeding; later, the bird was tracked from the north to the Greenhorn Mountains in Sequoia National Park. The bird has roosted in the forest or in the foothills of the southern Sierra Nevada since that time. The condor research team is pleased with the data gathering so far, especially the valuable information on the condor foraging patterns and roosting areas. Some of these areas show signs of long-term condor use but little was known about them until now. At least one important roosting site appears vulnerable at this time because of access roads and nearby hunting. The new information should help in the conservation of these habitats.

The condor research team has resumed attempts to trap an immature female condor as a prospective mate for Topa Topa, the male condor in captivity at the Los Angeles Zoo. Meanwhile, the condor chick taken into captivity on August 13 due to parental neglect is doing well and is making its first short flights.



Endangered Species Program regional staffers have reported the following activities for the month of October:

Region 1—Update: California Channel Island Bald Eagle Reintroduction Project—Of the bald eagles (*Haliaeetus*

leucocephalus) released thus far (6 in 1980, 6 in 1981, and 4 in 1982, all on Santa Catalina Island), a population of 12 to 14 eagles still resides on the island. The known losses were: 1) one of the 1980 birds left the island; and 2) a 1981 eagle was shot. These results are consi-

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dered quite successful, and we hope they will lead to natural reproduction on the island.

Euphorbia skottsbergii var. *kalae-loana* Sherff, also known as the 'Ewa Plains 'akoko, was officially listed as Endangered on August 24, 1982 (see September 1982 BULLETIN). The plant was believed to have a major portion of its population situated in an area destined to become the center of a major Federal-State of Hawai'i development project, the Barbers Point Deep Draft Harbor. A botanical survey of the area was completed in late 1979, and it was estimated that 4,000 individuals existed throughout its range on the 'Ewa Plains, O'ahu. In anticipation of possible Section 7 conflicts if and when the plant was listed, the U.S. Army Corps of Engineers began informal consultation with the Service early in the project planning stages. In April 1979, it appeared that construction might have a significant impact on the plant; therefore, the Service recommended that additional surveys and continued transplantation experimentation be pursued. The Corps cooperated fully with our suggestions and did fund additional surveys. An October 1981 survey revealed that the area originally believed to contain only perhaps 500 plants contained over 5,000. As a bonus, the plants were located in the Naval munitions storage area, a site well protected from fire and vandalism and situated beyond the area to be affected by the harbor development. Largely as a result of this find, when the plant was listed in August as an Endangered species, the loss of the approximately 50 individuals existing in the area of the harbor-to-be was no longer crucial to the survival of the 'akoko. Early cooperation on an informal basis between the Service and the Corps eliminated what could have been a major development/endangered species conflict.

Contract work was completed by Dr. Paul Hammond and Dr. David McCorkle on the 1982 status and distribution of the Oregon silverspot butterfly (*Speyeria zerene hippolyta*). Twenty-four areas of known, historic, and potential habitat was surveyed. Three vigorous populations and three weak populations were found. Only one small population occurs in Washington; the others are along the Oregon coast. Habitat was assessed, as were management recommendations that appear to be reasonable and implementable. Based on this work and the guidance in the recovery plan, the Service can now move ahead with a workable program to recover this species.

Region 2—The ocelot (*Felis pardalis*) survey initiated in south Texas in the autumn of 1981 has been expanded to include Laguna Atascosa National Wild-

Continued on page 6

RULEMAKING ACTIONS — October 1982

Monito Gecko Listed as Endangered

The Monito gecko (*Sphaerodactylus micropithecus*), a small lizard known only from tiny Isla Monito in the Commonwealth of Puerto Rico, has been listed as Endangered, and the uninhabited island has been determined Critical Habitat (F.R. 10/15/82). Predation by introduced rats is the main threat to the reptile.

Dr. Howard W. Campbell discovered the Monito gecko in May 1974, and gathered several specimens from which the species was described in 1977. During his 2-day visit to the island, Dr. Campbell observed a dense population of introduced black rats (*Rattus rattus*), and he expressed concern about their impact on two genera of lizards on Monito, *Ameiva* and *Sphaerodactylus*. Rats are known predators of lizards and their eggs.

In August 1982, personnel of the U.S. Fish and Wildlife Service and the Puerto Rico Department of Natural Resources conducted a survey to look for the Monito gecko. The entire island was covered thoroughly using transect techniques, and 18 geckos were discovered in two small populations. A total of 24 rats also was observed. The survey confirmed that geckos are indeed rare on Monito.

On October 22, 1980, the Service proposed listing the Monito gecko as Endangered and determining Isla Monito as Critical Habitat. Informal public meetings on the proposal were held in Mayaguez, Puerto Rico, on December 2, 1980, and in San Juan on December 3, 1980. A total of 12 comments were received. Governor Carlos Romero took no position on the proposal, but the Puerto Rico Department of Natural

Resources endorsed it. The U.S. Navy stated no objections, and indicated that the small island is not being considered for use in bombing practice like some other islands around Puerto Rico. Most of the other comments were supportive of the proposal. One individual did express opposition, asserting that the gecko's scarcity and danger from rat predation were not proved, although he acknowledged that he was not familiar with the gecko habitat or the ecology of Monito. In its response, the Service pointed out that the August 1982 survey, which was conducted to address these questions, left no doubt about the gecko's rarity.

Effects of the Rule

As an Endangered species, the Monito gecko will receive protection under Section 9 of the Endangered Species Act, including the prohibitions on taking, interstate trade, and import/export. Federal agencies are directed to insure that their actions will not degrade the gecko's Critical Habitat, as outlined in Section 7. The listed status also will authorize a recovery program, a significant part of which is expected to address rat predation on the lizard.

Monito is a very small (about 300 meters x 500 meters) island almost midway between Puerto Rico and the Dominican Republic. It is surrounded on all sides by nearly vertical cliffs which make the island virtually inaccessible. (The 1982 survey team had to be taken to the island by helicopter.) Monito is owned by the Commonwealth of Puerto Rico and managed as a seabird reserve. No federally authorized or funded development projects are planned for the island.

Two Small Mammals Under Status Review

The Service has accepted a petition to add the Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis*) and the Choctawhatchee beach mouse (*Peromyscus polionotus allopshys*) to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 10/6/82). The Service has determined that the petition presents substantial evidence warranting the listing of these two small mammals and now is assembling needed supporting information.

According to the petition, these two mammals occupy very restricted areas of dunes along the Gulf Coast of Alabama and Florida. Most suitable habitat has recently been lost because of resi-

dential and commercial development, beach erosion, and vegetation succession. Competition from introduced house mice (*Mus musculus*) and predation by domestic cats (*Felis catus*) also seems to be a problem.

The Perdido Key beach mouse originally occurred on much of Perdido Key, which extends along the Gulf Coast of Baldwin County, Alabama, and Escambia County, Florida. The Choctawhatchee beach mouse inhabited the Gulf Coast of Florida from the East Pass of Choctawhatchee Bay, Okaloosa County to Shell Island, Bay County. Remnant populations of beach mice are fragmented and declining. The total number of surviving individuals is estimated at only 78 for *P. t. trissyllepsis* and 515 for *P. t. allopshys*.

The petition to list these animals was submitted on June 9, 1982, by Dr. Stephen R. Humphrey, Associate Curator in Ecology, Florida State Museum, University of Florida, Gainesville, Florida 32611. The Service will issue a proposed rulemaking as soon as possible.

Recovery Meetings Held

Recovery plan coordinators from each of the Service's seven regions met October 26-27. Representatives from each of the Service's five bald eagle recovery teams also participated in a 2-day gathering, the Bald Eagle National Recovery Team Leaders' Meeting, on October 27-28. Both meetings were held in the Washington, D.C., area.

The recovery team coordinators discussed past recovery planning operations and procedures and explored areas of needed change. As a result of the meeting, revisions will be made in the recovery plan guidelines.

During the second meeting, the five plans developed for various U.S. geographical areas of bald eagle habitat were compared and contrasted in an effort to assure unity of approach to recovery activities. Other matters of significance which were discussed included the Departmental Solicitor's Opinion on the Bald Eagle Act, the feasibility of satellite telemetry, survey techniques and terminology, and the National Bald Eagle Color-Marking Protocol. The latter is being developed by the working group headed by Dr. Paul Frenzel of the University of Minnesota. On the second day of the meeting, the bald eagle team leaders met with the Service's regional recovery team coordinators to discuss the bald eagle plans in light of Service policy regarding implementation of the five plans.



The Monito gecko is a grayish-brown lizard with dark spots, and a 1982 survey found individuals up to about 60mm in total length. It is endemic to tiny Monito Island.

Tax Check-offs Bolster State Nongame Programs

Since 1977, 20 States have successfully passed income tax check-off legislation designed to raise funds for nongame wildlife conservation. In these States, taxpayers have the option of designating all, or part, of their tax refunds to a State fund earmarked for specific conservation needs.

Colorado passed the first nongame "check-off" bill in 1977 and has raised over \$2.9 million during the 5 tax years that it has been in effect (1977-1981). Minnesota's check-off program began in 1980; during that year the State received \$569,277—the largest amount received by any State in the first year of its program. (See accompanying chart for funding results in other States.)

Forty-nine States carry out some sort of nongame program within their respective wildlife agencies. Recently, many States have experienced budget cuts brought about by Federal and State fiscal cutbacks, and funding for many nongame programs has been greatly reduced. Consequently, the search for alternate funding sources has gained considerable impetus — 18 States have passed check-off bills during the past 3 years.

The State programs are not identical. Most are designed to create funds solely for nongame species conservation. Other programs, such as those in Louisiana, New Mexico, and New York, are established to benefit all wildlife, including nongame and endangered species. Kentucky's legislation provides that the tax refund proceeds be used both for nongame and habitat acquisition, whereas, Louisiana's funds are earmarked entirely for land acquisition.

Problems on the Horizon

The check-off programs are quite successful and are "turning the heads" of many special-interest groups. Feeling the squeeze of our nation's current economic situation, these groups, too, are anxious to get on the "check-off bandwagon." In fact, four States already have income tax check-off programs for causes other than wildlife conservation: Alabama has a fine arts fund; Arkansas, a fund to rebuild a football stadium; Idaho, an Olympic fund; and Oregon, a continuing arts fund.

States that already have programs are aware, of course, that multiple check-offs will dilute the funds now going to wildlife programs. States that are seeking programs fear that their respective legislatures will not be receptive to a wildlife check-off, anticipating the clamor from many other groups also wanting a tax check-off program. Rather than clutter the tax form with multiple check-off boxes, most legislators, they feel, will choose to deny all check-off seekers.

How, they ask, can State lawmaking bodies be convinced to say "yes" to wildlife check-offs and "no" to all others? Pennsylvania was recently successful in doing just that. Pennsylvania's legislation prohibits the establishment of any other check-off line on the State income tax form. Other States will probably be looking to Pennsylvania for advice.

Natural Resources — a Public Trust

The role of governments as public trustees in the task of wildlife conservation has been an integral part of U.S. Supreme Court decisions and of American wildlife laws since the late 19th century. Court actions have clarified the principle that wildlife is the collective property of all the people — not the private property of individuals or groups.

Picking up on this theme, Pennsylvania wildlife biologist, Jerry Hassinger, helped prepare the groundwork for his State's check-off program. Hassinger distributed letters to all State legislators, capsulizing the public trust concept and its foundation in American law and tradition. The letter promoted a wildlife check-off as unique from all other possible check-off programs. "Other causes," he said, "are not public trust resources to be passed on to future generations... Wildlife does not belong to any interest-specific public."

"It is certainly appropriate," Hassinger

continued, "to use a public document—the state income tax form—to solicit donations for a public trust fund for the care and conservation of the public's *collective property*." Pennsylvania will collect its first-year funding in 1983—dollars from 1982 tax refunds.

Programs are Working

In several States, officials in the departments of revenue initially opposed the check-off concept, stating as their reason the administrative costs such programs would incur. However, most States have been pleasantly surprised by the low price ticket associated with their programs.

New Jersey, for instance, anticipated high administrative expenditures but had quite minimal expenses in 1982—along with great financial success. Utah's tax commission is handling the administration of their program without finding it necessary to assess the Nongame Wildlife Fund at all.

A number of States, including Arizona, Idaho, Kansas, Minnesota, New York, and South Carolina, have written their check-off legislation and have designed their tax form so that anyone—whether a refund is due them or not—can make a donation on their tax return. Persons with no refund can fill in an especially provided line and add any amount to "dollars owed" for the wildlife fund. Many other States have made it



Publicity materials for Minnesota's nongame wildlife check-off campaign include posters, television and radio public service announcements, informational cards, gummed labels for birdseed bags, and public service ads on milk cartons. These materials have helped generate more than \$1 million in donations during the past 2 years.

possible to donate directly to the check-off fund by mailing a check payable to the various funds. In several States (Iowa and Kentucky) persons can donate to the check-off fund only if they have a refund.

The development of public relations materials has played an important role in the success of most of the State programs. Many States have developed tools such as radio and television spots, news releases, magazine and newspaper articles, slide/tape programs, and information cards to be tucked into correspondence and tax forms.

Idaho printed their check-off logo and information on their program on State hunting and fishing regulations. Minnesota negotiated with bird seed distributors to place gummed labels advertising their program on sacks of bird seed, and with local dairies to print the check-off

logo on the sides of milk cartons. Minnesota also succeeded in getting the telephone company to use their logo and some check-off data to decorate the cover of their telephone books.

Oregon negotiated with the State government and with private businesses to insert information cards into employees' payroll check envelopes. Virginia was able to get private businesses to donate paper, and design, typesetting, and printing services to produce an endangered species booklet. The Department of Revenue in West Virginia incorporated the check-off into the tax preparation booklet issued in their State.

The U.S. Internal Revenue Service has been very helpful in providing to the States names of certified tax preparers. Many States contacted the tax preparers by letter and sent information about the

check-off donation which is tax deductible during the next tax year for those itemizing deductions. Utah's Director of Internal Revenue also included an article on the check-off program produced by the Utah Fish and Game Department in the State's monthly bulletin to tax preparers.

The programs are proving to be unifying forces within conservation communities, appealing to the generosity of both hunters and non-hunters. Whereas hunters and anglers have for many years supported game management activities through sales taxes on support equipment and through license fees and stamps, the check-off program is the first vehicle to be established which allows non-consumptive wildlife "users" to contribute directly to wildlife conservation.



Illustration by Permission of New Jersey Nongame Wildlife Fund.

STATE INCOME TAX CHECK-OFF PROGRAMS

FUNDING RESULTS

States* with Programs	Year Bill Signed	Tax Year	Totals	Contributors	% of Persons Having Refunds Contributing	Average Contribution
Alabama	1982	----	----	----	----	----
Arizona	1982	----	----	----	----	----
Colorado	1977	1977	350,000	90,000	9.0%	\$3.89
		1978	501,000	118,600	12.0%	4.22
		1979	647,200	129,300	11.9%	5.00
		1980	740,000	139,850	12.7%	5.30
		1981	692,000	124,000	12.4%	5.60
Idaho	1981	1981	102,500	22,000	----	4.43
Indiana	1982	----	----	----	----	----
Iowa	1982	----	----	----	----	----
Kansas	1980	1980	128,788	21,786	3.6%	4.87
		1981	130,193	----	----	----
Kentucky	1980	1980	85,619	13,611	1.2%	6.29
		1981	80,000	11,038	1.3%	7.20
Louisiana	1981	1981	344,198	35,858	2.5%	10.42
Minnesota	1980	1980	569,277	170,177	9.8%	3.39
		1981	624,899	195,503	11.4%	3.20
New Jersey	1981	1981	403,000	100,000	4.8%	4.05
New Mexico	1981	1981	256,000	24,000	4.6%	10.68
New York	1982	----	----	----	----	----
Oklahoma	1981	----	----	----	----	----
Oregon	1979	1979	347,000	94,848	11.5%	3.42
		1980	359,981	97,803	11.1%	3.68
		1981	272,152	65,916	8.1%	4.13
Pennsylvania	1982	----	----	----	----	----
South Carolina	1981	1981	100,000	20,500	2.0%	4.85
Utah	1980	1980	216,594	55,366	16.0%	3.91
		1981	204,726	47,942	14.1%	4.27
Virginia	1981	1981	371,000	61,692	3.4%	5.92
West Virginia	1981	1981	164,649	37,340	7.9%	4.41

Total Contributions for 1981 = \$3,745,317

* Delaware, Illinois, Maryland, Massachusetts, Michigan, Nebraska, and Wisconsin have all attempted to get check-off bills through their respective legislatures.

REGIONAL BRIEFS

Continued from page 2

life Refuge near Rio Hondo, Texas. Preliminary ocelot captures led to radio-collaring of an adult male, two adult females (one lactating), and a 7-pound female kitten. The capture efforts will continue and be expanded to other parts of the refuge during the remainder of 1982.

Little Creek, in the Gila Wilderness Area of New Mexico, was sampled during October to determine the success of the stream renovation carried out earlier this year. No salmonids were found, indicating the successful removal of exotic brown trout (*Salmo trutta*) and the effectiveness of the fish barriers. Gila trout (*Salmo gilae*) stocking is scheduled for November 1982.

Dexter National Fish Hatchery participated in the last 1982 stocking of razorback suckers (*Xyrauchen texanus*). About 13,000 were involved, bringing the year's total to over 600,000. In addition, Dexter supplied Region 6 with over 30,000 juvenile Colorado River squawfish (*Ptychocheilus lucius*) for stocking in the upper Colorado River Basin near Grand Junction, Colorado.

Technical review drafts of recovery plans for the following plants have been sent out for review: gypsum wild buckwheat (*Eriogonum gypsophilum*), Nichol's Turk's head cactus (*Echinocactus horizontalis* var. *nicholii*), Brady pincushion cactus (*Pediocactus bradyi*), Knowlton cactus (*Pediocactus knowltonii*), Peebles Navajo cactus (*Pediocactus peeblesianus* var. *peeblesianus*), and the Mesa Verde cactus (*Sclerocactus mesae-verdae*).

Region 3—Endangered species

staffers provided training on Section 7 consultation procedures to personnel at the Service's Ecological Services field stations.

Region 5—A new booklet, *New England's Rare, Threatened, and Endangered Plants*, is being finalized under the direction of regional endangered species botanist Richard Dyer. It will focus on 101 of the region's rarest plants, and will include detailed scientific illustrations, distribution maps, color plates, and species narratives. Details on availability and cost will be announced in next month's BULLETIN.

Another book, *Endangered and Threatened Wildlife of the Chesapeake Bay Region: Delaware, Maryland, and Virginia*, is now available (see advance announcement in the July 1982 BULLETIN, "New Publications," for details on ordering). The 147-page book was a cooperative effort of the Chesapeake Bay Foundation and Region 5 personnel. Martha Carlisle Tacha and Andrew Moser of the Annapolis Field Office provided substantial information and editorial support.

Regional Endangered Species Specialist Paul Nickerson attended a peregrine falcon recovery meeting in Minnesota on September 22-23. Among the topics discussed were an expansion of the peregrine (*Falco peregrinus*) release program into other geographical regions as called for in the recovery plan.

Region 6—The greater Yellowstone Ecosystem Bald Eagle Working Team met in late August. Information collected by the team indicates that there were 38 occupied bald eagle territories in the ecosystem in 1982. Data from the 35 territories where production success

was known show that 23 young fledged, which is 0.66 young per territory. The team intends to have a management plan drafted by December 1.

The Northern Grizzly Bear Ecosystems Steering Committee met in August. They approved a charter and elected Ed Schneeegas, U.S. Forest Service, Missoula, Montana, as chairman. The group reviewed Priority 1 Recovery Tasks in the Grizzly Bear Recovery Plan, establishing research priorities for the northern ecosystems, and reviewed ongoing research projects.

Biologists with the Service's Colorado River Fishery Monitoring Program assisted with the microtagging of 31,000 young-of-the-year Colorado squawfish (*Ptychocheilus lucius*) produced at Dexter National Fish Hatchery in Region 2. About 30,000 of the fish were then transported in two trucks to Grand Junction, Colorado. About 10,000 squawfish were placed into each of two gravel pits for predation studies. The remaining 10,000 were released into four backwater areas of the Colorado River to obtain information on their movements.

The Peregrine Fund in Fort Collins, Colorado, induced 33 captive female American peregrine falcons (*Falco peregrinus anatum*) to lay 223 eggs in 1982. Of 125 (56 percent) which were fertile, 97 (78 percent) hatched and 85 (88 percent) of the chicks survived. The Fund also received 26 eggs from 7 peregrine eyries in Colorado. Of 22 (85 percent) which were viable, 20 (91 percent) hatched and 19 (95 percent) chicks survived. Of these, 86 were released in the wild in the following States: Colorado (49), Wyoming (14), Montana (8), Idaho (8), Utah (6), and California (1). These releases met the commitments established in the 1982 peregrine falcon reintroduction plan. Of the 86 released, 60 (70 percent) are known to have reached independence.

Region 7—Five recent peregrine falcon (*Falco peregrinus*) band encounters highlight this month's news from Alaska. A 1981 hatching-year (HY) American peregrine falcon (*F. p. anatum*) from an upper Yukon River eyrie was recovered in north-central Brazil in February 1982. A 1982 HY American peregrine from an eyrie along the Kuskokwim River was trapped by Ken Riddle in October 1982 at Padre Island, Texas. Also trapped by Riddle and his team were three 1982 HY Arctic peregrines (*P. f. tundrius*) from the Colville River system. These are the first Texas encounters from the Colville system since the Service began its peregrine banding program in 1979. The encounter from the Kuskokwim was the first ever from that region. In the past 5 years, Service biologists and contractors have banded 662 peregrines in Alaska and, to date, 22 encounters have been reported.



A survey for the ocelot has been expanded to include Laguna Atascosa National Wildlife Refuge.

ACT AMENDMENTS

Continued from page 1

extension will be permissible only if there exists substantial disagreement among specialists regarding the sufficiency or accuracy of the required biological data. Extensions to allow additional time to conduct economic or other analyses relating to Critical Habitat designations are not permissible. A determination to withdraw a listing or delisting proposal will be subject to judicial review. Existing proposals are now treated as though proposed on October 13, 1982.

The new amendments restate the general requirement of concurrent listing and Critical Habitat designation but authorize listing without the latter in certain circumstances. If a Critical Habitat designation is found "not prudent," the listing can become final at any time during the new 1-year (or 18-month) period. When scientific and commercial information indicates that prompt listing of the species is essential to its conservation, but the analysis necessary to designate Critical Habitat has not been completed, the listing must be finalized within or upon expiration of the 1-year period (or the 18-month period) without designating Critical Habitat.

When Critical Habitat determinations have been deemed *not determinable* within the 1-year (or 18-month) period, the 1-year period may be extended by not more than 1 additional year. At the end of the second year or sooner, the species must be listed and Critical Habitat must be determined to "the maximum extent determinable." Revisions may be made as new information becomes available.

Consultation/Exemption Changes

Section 7 of the Act requires Federal agencies to use their authorities to conserve Endangered and Threatened species and prohibits them from taking actions that are likely to jeopardize the continued existence of such species or destroy or adversely modify their Critical Habitat. If a Federal agency determines that its activities may affect an Endangered or Threatened species, it must consult with the Fish and Wildlife Service (or with the National Marine Fisheries Service). This consultation is held to identify how the agency's activities would affect the species and, in cases where the activity is likely to jeopardize the species, to identify reasonable and prudent alternatives that would allow the activity to proceed without harmful consequences.

The 1982 Amendments provide a new component to the consultation process, allowing consultations between Federal agencies responsible for issuing permits or licenses for a project and the Service

to be initiated at the request of prospective license or permit applicants. This provision will allow such applicants to receive the Service's biological opinion regarding their proposed activity earlier in the course of their planning. The amendments call for guidelines to be written by the Service which will define the types of projects eligible for early consultation and exclude projects of a speculative or tentative nature.

A written statement from the Service, received by the consulting agency and applicant promptly after the conclusion of the early consultation, will be viewed as the Service's biological opinion. This document will provide the same counsel as a biological opinion issued upon the completion of a consultation under Section 7(a)(2), provided the Secretary finds before the permit is issued that both the project and the available information remain essentially the same. Consultations initiated at the request of applicants will be concluded within a mutually agreed upon period of time.

The usual consultation process under Section 7(a)(2) is amended to allow an extension of the normal 90-day consultation period of up to 60 days without the agreement of any involved permit appli-

by the Secretary of the Interior (or Commerce) will be accomplished within 20 days of receiving the application; the report of the Endangered Species Committee within 140 days; and a final decision by the committee within 30 days after receipt of the report. The amendments also delete the requirement that representatives of the Endangered Species Committee be Presidential appointees subject to Senate confirmation.

When exemptions are sought, the Secretary that issued the biological opinion will provide a report to the Endangered Species Committee discussing the availability of reasonable and prudent alternatives to the action for which the exemption is sought and other considerations set forth in the law. To ensure that reports are nonbiased, a formal adjudicatory hearing will be held, conducted by an administrative law judge within the time-frame allocated for preparation of the report.

Amendments Offering Flexibility

The amendments give greater flexibility in the treatment of Endangered and Threatened species that are introduced into areas outside their current range.

"The amendments give greater flexibility in the treatment of species that are introduced into areas outside their current range."

cant. The Service must, however, notify the applicant in writing before the close of the 90-day consultation period, explaining the reasons for the extension, stating the information required to complete the consultation, and giving the estimated date for completion of the consultation. Extensions for longer than 60 days require the consent of any involved permit applicant. The 180-day period allowed for biological assessments under Section 7(c) may not be extended unless a written notice giving the reason for such an extension and an estimated length of the extension is presented to the applicant, if one is involved.

The amended Act allows permit applicants to enter the exemption process only after being denied a permit. Persons denied permits may seek administrative review of the denial prior to applying to the Endangered Species Committee for an exemption if they choose. However, an applicant denied a permit may not seek administrative review and begin the exemption process simultaneously.

Time-frames for the three stages of the exemption process have also been shortened. Threshold findings made

Regulations to further the conservation of each of these "experimental populations" will determine whether the population is *essential* to the continued existence of the species. If the population is determined to be *essential*, then it will be treated as a Threatened species and will receive all the protection afforded such species under the Act. If the population is determined to be *not essential*, the population will be protected in the same manner as species proposed for Endangered or Threatened status and will not receive the full protection of the Act unless it occurs on a National Wildlife Refuge or a National Park.

Another provision of the amendments allows for more flexibility in regulating the incidental taking of Endangered and Threatened fish and wildlife. Under the old Act, even though the Service issued a non-jeopardy opinion or a jeopardy opinion with reasonable and prudent alternatives, the taking of species incidental to the action consulted upon could still be considered a violation of the Act's taking provision [Section 9(a)(1)]. Under the new amendments, when a jeopardy or non-jeopardy opinion has

Continued on page 8

ACT AMENDMENTS

Continued from page 7

been issued, the Service must provide the consulting Federal agency and the permit applicant with a written statement concerning incidental take on the species, the reasonable and prudent measures deemed necessary or appropriate to minimize such impact, and the terms, conditions, and reporting requirements to ensure that those measures are taken. If the action agency complies with these measures, the agency will not be held liable for any incidental taking that occurs.

In addition, the amendments establish a procedure whereby individuals whose actions may affect Endangered or Threatened species may receive permits for the incidental taking of such species, provided the action will not jeopardize the continued existence of the species. This provision addresses the concerns of private landowners who are faced with having otherwise lawful actions not requiring Federal permits prevented by Section 9(a)(1) prohibitions against taking.

developers to provide for the conservation of the habitat of three Endangered species and other unlisted species of concern within the San Bruno Mountain area of San Mateo County.

Section 9(a)(2)(B) of the Act is added, to provide a taking prohibition for Endangered plants on Federal land, whose removal and reduction to possession is now prohibited without permit.

Other Amendments

Other 1982 amendments affect the United States' implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Section 8A of the Act now clarifies that the Secretary is required to base export determinations upon the best available biological information derived from professionally accepted practices used in wildlife management and that population estimates are not required as part of the data needed by the Service to authorize export of Appendix II species. This change overrules the decision of the U.S. Court of Appeals for the District of

exempt from CITES regulations. An amendment to Section 10 changes the time frame for antique exemptions from "made before 1830" to "not less than 100 years old." With the new language, the Act now conforms to existing custom tariff regulations.

Section 11 of the old Act authorizes the seizure and forfeiture of any fish or wildlife or plant that has been imported in violation of the law. Under the new amendments, however, if no indication of fraud, negligence, or intent to violate the law exists, certain non-commercial transshipments of fish or wildlife will be considered lawfully imported. Such exceptions do not authorize the importation for purposes of processing wildlife products or mounting of trophies in the United States and subsequent exportation without proper permits. Rather, they simply allow passage through the United States of non-commercial imports when these objects were lawfully exported from the country of origin and of re-export, and when they may be lawfully imported into the country of destination. Passage through the country is also allowed when the exporter or owner gave explicit instructions or did all that could have reasonably been done to prevent transshipment through the United States. Other new law enforcement provisions allow the Attorney General the authority to seek injunctive relief under Section 11 of the Act. The citizen suit provisions of the Act were amended to authorize actions against the Department of the Interior (or Commerce) for failure to perform the acts and duties that are imposed by Section 4, as amended.

Other amendments include 1) a resolution of conflict between two Federal circuit court opinions regarding the applicability of the prohibition of Section 9 of the Act to pre-Act wildlife held in the course of a commercial activity after December 28, 1973, and 2) the substitution of the word "recreational" for the word "sporting" in the summary of factors that are to be considered under Section 4 of the Act when determining whether a species is Endangered or Threatened.

Appropriations

The new legislation authorizes appropriations through fiscal year (FY) 1985 for the Departments of the Interior, Commerce, and Agriculture. These appropriations are not to exceed an annual \$27 million, \$3.5 million, and \$1.85 million, respectively. Appropriations for cooperative agreements with the States (Section 6) were also authorized through FY 1985 not to exceed \$6 million annually. Appropriations of the Western Hemisphere Convention [Section 8A(e)] were also authorized through FY 1985, at a 3-year total of \$600,000.

"Changes affecting the listing . . . of species are intended to ensure that decisions are based solely upon biological criteria."

The new amendments authorize the Service to permit any taking otherwise prohibited by Section 9(a)(1)(B) of the Act if the taking is incidental to, and not the purpose of, an otherwise lawful activity. Applicants for such permits must submit a conservation plan that specifies the impacts which will likely result from such taking, what steps the applicant will take to minimize and mitigate those impacts, what other alternatives that would not result in the taking were analyzed, and why these alternatives were not adopted. The decision whether to grant a permit or not will be based on whether the taking will appreciably reduce the likelihood of the survival and recovery of the species in the wild.

Conservation plans developed in compliance with the above provision would be developed jointly between the appropriate Federal wildlife agency and the private sector or local or State government agencies. This provision is modeled after a habitat conservation plan that has been developed by three Northern California cities, the County of San Mateo, and private landowners and

Columbia in *Defenders of Wildlife, Inc. v. Endangered Species Scientific Authority*, 659 F. 2d 168 (D.C. Cir. 1981). The Amendments abolish the International Convention Advisory Commission, and specify that if the United States delegation to CITES votes against the inclusion of a species in Appendix I or II, but the listing occurs, the Secretary of State must submit a report to Congress in the event that no reservation is entered by the United States.

The Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere is much more fully implemented by Section 8A(e) of the new amendments. In particular, steps are required in developing personnel resources and programs, and in conservation of migratory birds and wild plants. By October 1985, a report to Congress is required on the steps that have been taken in this regard, and identifying actions still necessary for comprehensive implementation of the Western Hemisphere Convention.

A change in Section 9 of the Act clarifies the scope of raptor exemptions, making it clear that raptors are not

CITES NEWS - October 1982

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Ginseng Export Findings Announced

The Service announced final findings on the export of American ginseng (*Panax quinquefolius*) taken in the 1982-84 harvest seasons (F.R. 10/4/82). Findings were made on a State-by-State basis.

Guidelines used this year in determining if exports will be detrimental to the survival of the species are identical with those used last year. Findings were issued for some States for a 3-year period.

The Service strengthened the "Certification of Legal Take" requirement for ginseng moved from the State of origin. Recognizing that certain States might not be able to implement such a certification program this season, the Service will accept, for the 1982 harvest season only, other forms of State certification that were approved for the 1981 harvest season.

On the grounds that both Scientific Authority and Management Authority criteria have been met, export of ginseng lawfully taken during the 1982-84 seasons has been approved from Georgia, Kentucky, Minnesota, North Carolina, Vermont (artificially propagated only), and Virginia. The Service approved export of ginseng lawfully taken during the 1982 (only) season

Alaskan, Pacific Coast Peregrine Recovery Plans Approved

The Service recently approved the last two in a series of four recovery plans to help restore United States populations of the peregrine falcon (*Falco peregrinus*). The Alaskan Population Peregrine Falcon Recovery Plan and the Pacific Coast American Peregrine Falcon Recovery Plan were signed by the Director last month; plans for the Rocky Mountain/Southwest population (1977) and the Eastern population (1979) were approved earlier.

The most significant factor influencing the decline of peregrines, both in Alaska and along the Pacific coast, was undoubtedly the use of organochloride pesticides, especially DDT and its principal metabolite DDE. DDE causes eggshell thinning resulting in egg breaking during normal incubation or embryo deaths. Eggshell thinning substantially lowered the breeding success of the peregrine and led to the listing in 1970 as Endangered of two United States subspecies, the Arctic peregrine falcon (*F. p. tundrius*) and the American peregrine falcon (*F. p. anatum*).

Both listed subspecies occur in Alaska, *F. p. tundrius* in the tundra region and *F. p. anatum* in the boreal forest region of the State. Since 1977, numbers in the tundra population have increased and reproduction has improved. However, no more than 60 percent of the historical sites in the tundra area have been reoccupied and production has remained low. Past trends and current status of boreal peregrines have varied from area to area, declines being less severe on the Yukon River, for example, than on the Tanana River. Current trends are generally favorable for the boreal population.

The Pacific coast population includes peregrines found in California, Nevada, Oregon, and Washington with California hosting by far the largest number of birds. Until 1950, California peregrine reproduction was generally successful but, between that time and 1970, the population had dwindled to only 2 confirmed active sites and probably not more than five active pairs. Recent data indicate that 50 to 60 pairs occur in the State—a rise in numbers due both to increased field observation and limited recovery of the population.

from Arkansas, Illinois, Indiana, Iowa, Maryland, Ohio, Missouri, Tennessee, West Virginia, and Wisconsin.

Beginning with the 1983 harvest season, all States seeking export approval for wild or cultivated American ginseng will be required to have a legally mandated ginseng inspection and certification program.

In spite of intense searches in Nevada, only one peregrine adult has been observed there recently during the breeding season. There have been several reports of active eyries in the Cascade Mountains and in eastern Oregon, but only one active site has been documented in recent years. In Washington, only three sites were known to be occupied in 1980 and 1981.

The objective of both recovery plans is to restore the peregrine to a secure status throughout its former range and, ultimately, to consider the species for delisting. Recovery actions for both populations will include the study of habitat needs and habitat protection; monitoring of population trends; monitoring of pesticide levels in principle prey species; and public information/education programs. The Pacific coast plan calls for the establishment of potential nesting locations. The Alaskan plan calls for the exploration of artificial restocking, to be employed only if natural production is insufficient to recover the species.

Implementation of the two plans will be initiated by the Service's Portland Regional Director and the Alaska Regional Director. Further information on these plans can be obtained by contacting the endangered species staffs of the regional offices.

Continued on page 10



U.S. Fish and Wildlife Service Photo by Tom Smylie

Reduced to precarious lows, the American and Arctic peregrine falcons were listed for protection as Endangered species in 1970, when the effort to assist their recovery was begun in earnest.

More Recovery Plans Approved

Continued from page 9

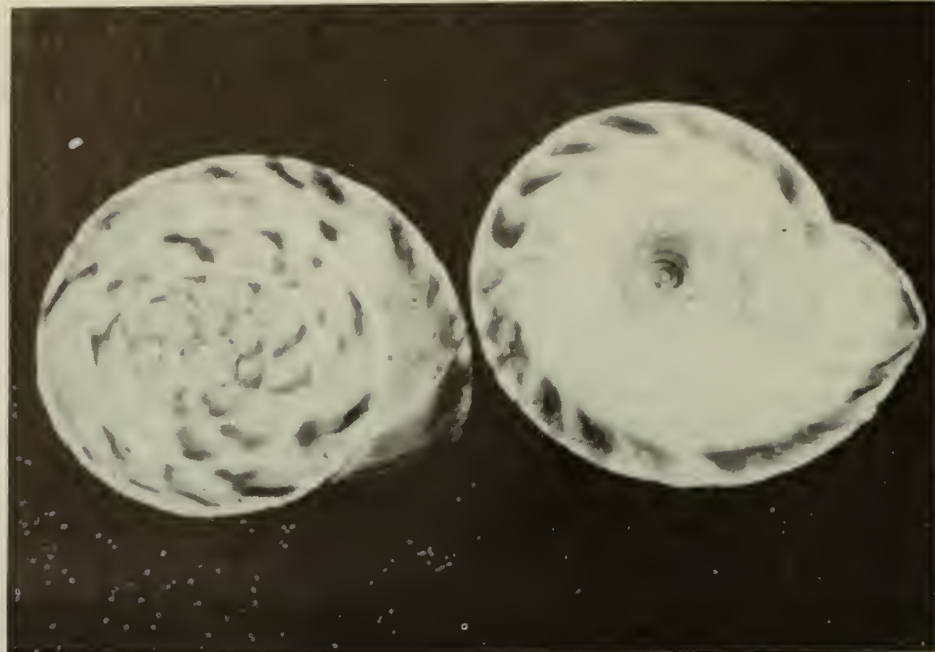
Three more recovery plans, the Puerto Rico Plain Pigeon Recovery Plan, the Painted Snake Coiled Forest Snail Recovery Plan, and the 'Alala Recovery Plan were approved by the Service last month. Implementation of the first two plans will be initiated by the Service's Atlanta Regional Director and the third by the Portland Regional Director. For further information about the plans, contact the endangered species staff of the respective regional office.

Puerto Rican Plain Pigeon

Little is known about the historic range and abundance of the Puerto Rican plain pigeon (*Columba inornata wetmorei*). Available literature indicates that the species was probably abundant in Puerto Rico at one time, and that habitat destruction and shooting are the probable reasons for its decline.

The only confirmed populations of the species now occur in the municipality of Cidra and surrounding municipalities in east-central Puerto Rico. Current estimates (March 1982) are that 75-85 pigeons still occur in the Cidra-centered population. Continued habitat destruction and disturbances to the nesting birds are likely to further limit pigeon population increases at Cidra and the surrounding areas.

The Puerto Rican plain pigeon is a large bird (38 cm; 15 in), about the same size as a domestic pigeon (*C. livia*). At a



Adult *Anguispira picta* range from 17-21 mm in width and 9-10 mm in height, and have six whorls. This snail is considered to be the most distinctly marked and richest in coloring of all *Anguispira* species.

distance the species appears pale blue-gray. The species is called "paloma boba" ("fool pigeon") in Cuba because of its lack of wariness. Because of this quality, and also because it sometimes nests in loose colonies, the bird is quite vulnerable to hunting. Despite a Commonwealth regulation (1967) closing the municipality of Cidra to hunting, plain pigeons are still being shot.

Recovery plan goals include the establishment of a minimum of two distinct wild Puerto Rican plain pigeon

populations, each consisting of at least 250 nesting pairs, and the securing of the existing pigeon habitat of the Cidra-centered population. After these goals have been achieved, the plain pigeon could be considered for delisting.

Painted Snake Coiled Forest Snail

The painted snake coiled forest snail (*Anguispira picta*) is a geographically restricted species of a widespread and quite successful land snail genus. It was discovered in 1906 (Clapp, 1930) at Buck Creek Cove, Franklin County, Tennessee, and apparently has not been reported from any other locality.

It is considered threatened because of its limited known habitat and because the entire habitat could be easily destroyed by lumbering, forest fires, or quarrying. Information on the species' ecology and history is almost completely lacking. It is believed to live only on limestone outcrops in areas of the cove having sufficient forest cover to maintain high moisture conditions. It seems to feed on lichens growing on the rock faces.

1974 studies on the species reported the snail to be restricted to areas of the cove between 750-800 feet in elevation. Later studies, however, show that the snail is not nearly as restricted in elevation as previously thought. The now known appropriate habitat, which includes elevations up to 1500 feet, covers about 324 acres. The 1974 studies estimated the snail population at 2000 individuals; the actual population may be 10 or more times that numerous. A survey of undisturbed areas within Buck

Continued on page 11



The decline of the Puerto Rican plain pigeon came in the early nineteenth century, at a time of almost total habitat destruction in Puerto Rico. Poorly regulated hunting probably occurred and contributed to the rate of decline.

Recovery Plan Update

The following recovery plans have been approved by the Director, but have not yet been featured in the BULLETIN: Eastern Cougar Recovery Plan (8/2/82), Mexican Wolf Recovery Plan (8/9/82), Desert Slender Salamander Recovery Plan (8/12/82), Morro Bay Kangaroo Rat Recovery Plan (8/18/82), and Oregon Silver-spot Butterfly Recovery Plan (9/22/82). A story on each plan will be included in coming issues.

Updated Microfiche of BULLETIN, Recovery Plans Available

Microfiche copy of the *Endangered Species Technical Bulletin* (July 1976-June 1982) is available from the Fish and Wildlife Reference Service in Denver, Colorado, for \$3.00 per set. Back issues of the BULLETIN are also available and will be sent free of charge upon request for as long as the supply lasts. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy to Fish and Wildlife Reference Service (FWRS), Unit i, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

FWRS is also the official supplier of

all the Service's approved endangered species recovery plans. FWRS does not have standing inventories of the printed recovery plans; all orders for plans are filled with photocopy or microfiche duplicates made on demand. Fees (as indicated below) are charged for every order received. (The *Cooperator Discount* does apply to recovery plan orders.)

A four-to-six-month printing time must be allowed following the date a recovery plan is approved by the Director; please understand that you might experience a delay when ordering newly approved plans. Orders should be placed with FWRS at the above address.

RECOVERY PLANS

Continued from page 10

Creek Cove revealed several size classes of snails (from 20mm down to 4mm) indicating that reproduction has been occurring and the present existence of a viable populations.

Immediate dangers to the species are those threats to its small, specialized habitat. Unless significant populations of *Anguispira picta* are found outside Buck Creek Cove and preclude the need for further protection of the species, a number of recovery goals would need to be met before this population could be considered recovered. The actions, listed in the recovery plan, include habitat protection, population monitoring, plans for continued periodic monitoring, and the control of collecting for scientific or other purposes

'Alala (Hawaiian Crow)

The recovery plan for the 'alala or Hawaiian crow (*Corvus tropicus*) is designed to identify the requirements for promoting the recovery of the species. The bird has not been studied in detail and there are many unknowns regarding its behavior, population structure, habitat requirements and needs for survival.

Within historic times the 'alala has lived only on the Island of Hawai'i, and as a breeding bird has been restricted to the forest of the western and southern sectors of the island. Around 1900 the 'alala apparently still occupied all of its originally known range and was described as "numerous." By the 1930's and 1940's it was greatly reduced in numbers. Recent surveys indicate an apparently discontinuous 'alala population distribution involving up to four subpopulations of breeding pairs. The

Continued on page 12

TITLE /region/

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Aleutian Canada Goose /1/	\$ 4.10	\$.50
American Crocodile /4/	\$ 3.00	\$.50
Arizona Trout /2/	\$ 4.20	\$.50
Black-footed Ferret /6/	\$15.70	\$ 2.00
Blue Pike /5/	\$ 5.90	\$.50
Blunt-nosed Leopard Lizard /1/	\$ 9.30	\$ 1.00
California Condor (revised) /1/	\$ 8.10	\$.50
California Least Tern /1/	\$ 6.40	\$.50
Clay Phacelia /6/	\$ 1.90	\$.50
Clear Creek Gambusia /2/	\$ 3.70	\$.50
Colorado River Squawfish /6/	\$ 6.90	\$.50
Columbian White-tailed Deer /1/	\$ 7.00	\$.50
Comanche Springs Pupfish /2/	\$ 3.10	\$.50
Cui-ui /1/	\$ 6.10	\$ 1.00
Delmarva Fox Squirrel /5/	\$ 3.10	\$.50
Devil's Hole Pupfish /1/	\$ 7.50	\$.50
Dusky Seaside Sparrow /4/	\$ 2.10	\$ 1.00
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Eastern Timber Wolf /3/	\$10.20	\$ 1.50
Florida Panther /4/	\$ 3.80	\$.50
Gila Trout /2/	\$ 5.10	\$.50
Greenback Cutthroat Trout /6/	\$ 3.00	\$.50
Grizzly Bear /6/	\$20.30	\$ 1.50
Hawaiian Waterbirds /1/	\$12.50	\$ 1.50
Humpback Chub /1, 2, 6/	\$ 7.40	\$.50
Indiana Bat /3/	\$10.60	\$ 1.00
Key Deer /4/	\$ 5.60	\$.50
Kirtland's Warbler /3/	\$ 8.90	\$ 1.00
Light-footed Clapper Rail /1/	\$ 5.60	\$.50
Maryland Darter /5/	\$ 2.30	\$.50
Masked Bobwhite /2/	\$ 3.20	\$.50
Mississippi Sandhill Crane /4/	\$11.40	\$ 1.00
Mississippi Sandhill Crane (revision) /4/	\$ 2.70	\$.50
Northern Rocky Mountain Wolf /1/	\$ 7.20	\$.50
Okaloosa Darter /4/	\$ 2.30	\$.50
Palila /1/	\$ 5.00	\$.50
Pahrump Killifish /1/	\$ 4.80	\$.50
Peregrine Falcon (East) /3,4,5/	\$15.40	\$ 1.00
Peregrine Falcon (West) /6/	\$19.20	\$ 1.50
Plymouth Red-Bellied Turtle /5/	\$ 1.90	\$.50
Red-cockaded Woodpecker /4/	\$ 4.50	\$.50
Santa Cruz Long-toed Salamander /1/	\$ 5.40	\$.50
Socorro Isopod /2/	\$ 2.00	\$.50
St. Croix Population of the Leatherback Turtle /4/	\$ 2.40	\$.50
Southern Sea Otter /1/	\$ 7.00	\$.50
Unarmored Threespine Stickleback /1/	\$ 6.30	\$.50
Virginia Round-leaf Birch /5/	\$ 6.70	\$.50
Warm Springs Pupfish /1/	\$ 2.70	\$.50
Watercress Darter /4/	\$ 2.70	\$.50
West Indian Manatee /4/	\$ 3.80	\$.50
Whooping Crane /2/	\$21.40	\$ 1.50
Woundfin /2/	\$ 7.10	\$.50

RECOVERY PLANS

Continued from page 11

total population is probably about 130 birds.

Land settlement in the Kona Districts and subsequent conflict with farmers' interests have been cited as a cause for the decline of the 'alala. No single factor, however, is totally responsible. Forest fires have reduced habitat available to breeding pairs and have reduced the availability of foods customarily used by the 'alala. Even today there are undoubtedly instances of shooting of this species. Introduced rats, mongoose, feral cats and dogs, as well as the Endangered 'io or Hawaiian hawk (*Buteo solitarius*) have been suggested as possible predators on the 'alala or its eggs and young. The occurrence or extent of such predation is, however, generally undocumented.

Recent studies indicate that the productivity of the 'alala is low, averaging 0.5 to 0.9 birds fledged per nest. Post fledging survival (2 weeks) is even lower.

While long term management cannot be a major part of this recovery plan, it recognizes that all attempts must be made to reduce disturbances to nesting birds, to maintain habitat suitability, and to determine the impact of avian diseases on both adult and nesting 'alala. The plan calls for supplementing the wild population to a minimum level of over 400 birds. At this population level, the species could probably sustain itself naturally without intensive management.

New Publications

Why Save Endangered Species? is now available from the Publications Unit, U.S. Fish and Wildlife Service, Washington, D.C. 20240. This 8-page

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	18	223	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	8	6	55	8	4	0	81
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	1	0	0	3
Insects	7	0	0	4	2	0	13
Plants	55	2	0	8	1	2	68
TOTAL	198	44	444	47	7	24	764

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 3 animals
6 plants

Number of Critical Habitats listed: 53
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 69
Number of Cooperative Agreements signed with States:

38 fish & wildlife
11 plants

October 31, 1982

illustrated (black and white) pamphlet is free.

The Proceedings of the Freshwater Mussels Workshop, held in St. Louis, Missouri, October 26-27, 1982, will soon be available. Major topics discussed at the meeting included techniques for impact assessment, habitat creation, relocation to new areas, and the collection and identification of common and endangered mussels. Copies of the proceedings may be requested by writing Andrew C. Miller, Research Limnologist, Waterways Experiment Station, Corps of Engineers, P.O. Box 631, Vicksburg, Mississippi 39180.

Call for Papers

A Snag Habitat Management Symposium will be held June 7-9, 1983, in Flagstaff, Arizona. This notice is a call for papers (15 minutes) relating to: 1) history and policy, 2) current and new research, or 3) management practices. A field trip is being planned during the last afternoon. Abstracts are due by February 15, 1983. Refer questions and send abstracts to Jerry W. Davis, Program Chairperson, Tonto National Forest, P.O. Box 29070, Phoenix, Arizona 85038 (602/261-4229).

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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San Francisco Peaks Groundsel Proposed as Threatened

The San Francisco Peaks groundsel (*Senecio franciscanus*), an alpine plant known only from one small area in the mountains north of Flagstaff, Arizona, has been proposed by the Service for listing as a Threatened species (F.R. 11/22/82). A Critical Habitat determination for the plant also was proposed. The main threat to the species is trampling from off-trail hiking.

Background

Senecio franciscanus was discovered by Edward L. Green in 1884. It is a dwarf alpine species, 3.2 to 10.2 cm tall, with deeply lobed leaves and small yellow flowers. The one known population is locally common within a total area of less than 2.6 square km between Humphreys and Agassiz Peaks, part of the San Francisco Peaks region of Coconino National Forest. This plant occurs on loose cinder talus slopes over 3,000 m in elevation as a primary successional species.

Very serious disruption to the plants and their habitat occurs when off-trail hikers cross or descend the mountain peaks over the loose talus slopes. A series of numerous parallel paths have been worn along the top and western face of Humphreys peak, destroying all vegetation in their way. The proposed expansion of the Snow Bowl ski area (a private concession on Forest Service land) could affect the habitat of *Senecio franciscanus* through increased numbers of hikers using the trail system. A small percentage of the habitat already has been destroyed by construction of the existing chair lift. Whether or not expansion of the ski area will have a serious detrimental effect on the species depends on the care taken to minimize such effects.

Senecio franciscanus was first proposed for listing in June 1976, along with about 1,700 other plants identified on a petition by the Smithsonian Institution. In accordance with the listing schedule deadlines imposed by the 1978 Amendments to the Endangered Species Act, the proposal was withdrawn in 1979. A

1980 status report, along with investigations carried out by Fish and Wildlife Service and Forest Service personnel, confirmed the threats to the species. The Service was again petitioned to list *Senecio franciscanus* on June 18, 1980, this time by the Navajo Medicinemen's Association.



The San Francisco Peaks groundsel (*Senecio franciscanus*) is threatened by trampling from off-trail hiking.

Effects of the Proposed Rule

Under Section 7 of the Act, Federal agencies are required to insure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of a listed species or adversely modify its Critical Habitat. The potential effects on the Forest Ser-

vice of the proposed rule have already been discussed with that agency, and it supports the listing of *Senecio franciscanus*. Forest management within the proposed Critical Habitat is not expected to be affected in a major way. The private company which operates the ski concession has no facilities in the area, and will not be affected.

The Forest Service has full responsibility for the trails within the proposed Critical Habitat. Development of a management plan would aid habitat conservation by regulating off-trail hiking in the area and by monitoring the plant's population status. Management might include eliminating some existing multiple trails, routing new trails away from the population sites, or posting signs prohibiting off-trail hiking. Such measures are expected to require minimal expenditures by the Forest Service.

Under Section 9(a)(2)(B) of the Act, as amended in October 1982, it is unlawful to remove and reduce to possession Endangered plants from Federal lands. Section 4(d) allows for extending such prohibitions to Threatened species through regulations. Once new regulations are developed, this new provision will apply to *Senecio franciscanus*, in addition to the general prohibitions on interstate trade and import/export.

Public Comment Requested

Comments on the proposed rule are requested from all interested persons, organizations, and agencies, and should be received by the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103, by January 21, 1983.

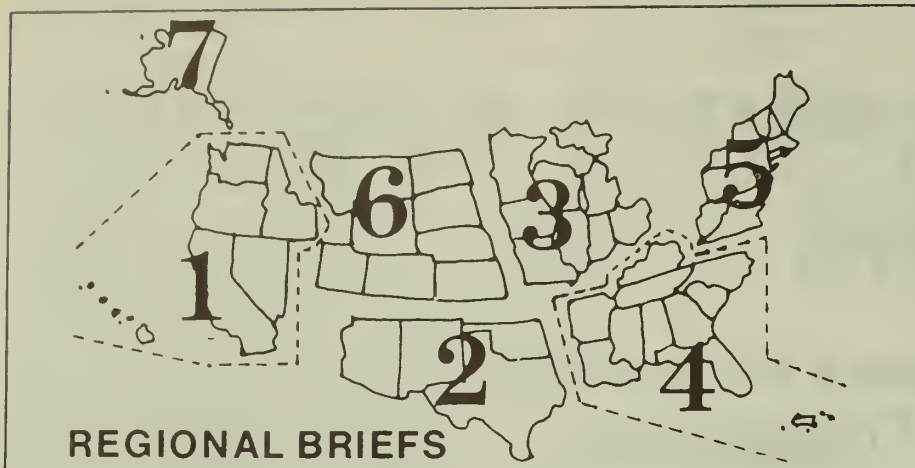
Malheur Wire-Lettuce Listed With Critical Habitat

A rare southeastern Oregon plant, *Stephanomeria malheurensis* (Malheur wire-lettuce), was listed under the Act as Endangered (F.R. 11/10/82). In addition, Critical Habitat has been determined for this species.

The single known population of the plant, found on 70 acres of Bureau of Land Management (BLM) land in Harney County near the Malheur National Wildlife Refuge, is vulnerable to any

substantial habitat alteration. Recently established mining claims that include the habitat of *S. malheurensis* hold potential threat for the plant. However, the Anaconda Minerals Company, which holds mining rights in the entire Critical Habitat area, has indicated its willingness to cooperate with the Service to conserve the species. The company has further indicated that mining

Continued on page 7



Endangered Species Program regional staffers have reported the following activities for the month of November:

Region 1—Aleutian Canada goose (*Branta canadensis leucopareia*) monitoring was initiated on the Oregon coast through a cooperative effort and funding between Region 1, Research, Suislaw National Forest, and the Oregon Department of Fish and Wildlife. This

monitoring supports State and Federal Canada goose hunting closures in two Oregon coastal areas to protect the Endangered Aleutian subspecies during its fall migration to California.

Region 4—The Agency Review Draft of the Green Pitcher-Plant (*Sarracenia oreophila*) Recovery Plan has been completed as stipulated in the court-ordered stay issued by U.S. District Judge U.W. Clemon on November 6,

1981. A 1-year stay in the litigation, *DeKalb County Commission v. Watt*, was granted in order to provide for the establishment of a recovery team and the development of a recovery plan. Recovery actions identified in the plan are geared toward the protection and management of selected extant colonies, efforts to re-establish and manage selected extirpated sites, and transplantation experiments.

Seven young-of-the-year Mississippi sandhill cranes (*Grus canadensis pulla*) produced at the Patuxent Wildlife Research Center are now being held in temporary holding facilities at the Mississippi Sandhill Crane National Wildlife Refuge in Jackson County, Mississippi. The cranes, received on October 21, have been fitted with radio transmitters and will be held until they appear to be well acclimated to their new environment. Current plans indicate a possible release sometime toward the end of November or the first part of December. Exposure and interactions between these new birds and native cranes, as well as those released 2 years ago, have already been noted by refuge personnel. Once released, the movements and behavioral characteristics will be monitored by a graduate student from the Louisiana Cooperative Wildlife Research Unit. This effort, the third straight year that birds from Patuxent have been released on the refuge, is geared toward augmenting the natural population (which now numbers between 30-50) and providing valuable information concerning habitat utilization and movement.

In July of this year, a new maternity colony of the Endangered gray bat (*Myotis grisescens*) was discovered near the Buffalo River National Park in Marion County, Arkansas. The cave, harboring a colony of approximately 10,000 adult female bats, has been tentatively named "Eureka Cave."

New Mammoth Cave in Campbell County, Tennessee, has been gated to prevent human disturbance of hibernating Indiana bats (*Myotis sodalis*). This project was a cooperative effort involving the cave owner and many volunteers who assisted in constructing the gate.

A pair of bald eagles (*Haliaeetus leucocephalus*) nested this year on the White River National Wildlife Refuge. Although eagles have continued to winter in Arkansas, this is the first time that eagles have nested in the State since 1952. The pair successfully fledged one eaglet in late July. Meanwhile, the State of Arkansas Game and Fish Commission has successfully completed its first attempt at hacking eagles. Two young eagles obtained from Minnesota and Wisconsin were successfully released from their hacking site near the Buffalo River this summer, after being main-

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U.S. Fish and Wildlife Regions

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The **ENDANGERED SPECIES TECHNICAL BULLETIN** is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Continued on page 6

Plans for Two Butterflies, Puerto Rican Parrot Approved

The following are summaries of recovery plans that were recently approved: Oregon Silverspot Butterfly Recovery Plan (9/22/82), Schaus Swallowtail Butterfly Recovery Plan (11/18/82), and Puerto Rican Parrot Recovery Plan (11/30/82).

Oregon Silverspot Butterfly

The Oregon silverspot butterfly (*Speyeria zerene hippolyta*), or Hippolyta silverspot, is a Threatened subspecies of fritillary (silverspot) butterfly endemic to a few sites along the Washington/Oregon coastal zone. Of 17 historically known populations once distributed along the coast from Rock Creek/Big Creek, Oregon, to Westport, Washington, only 6 have been documented in recent years and 3 of these consist of only a handful of individuals on deteriorating habitat. Most of the field data on this butterfly have been collected by Dr. David McCorkle and Dr. Paul Hammond, who have been studying it for more than 10 years.



The Oregon silverspot is a medium-sized, orange and brown butterfly with black veins and spots on the dorsal wing surface, and with a yellowish submarginal band and bright metallic silver spots on the ventral wing surface.

The Oregon silverspot is highly specialized and depends for its survival on salt-spray meadows, a habitat type that has never been common within the species' range. Due to habitat modification by human uses of the coastal areas, only three viable populations are still known to occur. One is at the mouths of Rock Creek and Big Creek in Lane County, Oregon. A second population is found at Cascade Head on a Nature Conservancy preserve, and the third is at the meadows of Mount Hebo; both the second and third populations are in Tillamook County, Oregon. (The third site is about 12 miles inland but has ecological characteristics that are analogous to the salt-spray meadows of the immediate coast.)

The habitat element most important to the Oregon silverspot is the western blue violet (*Viola adunca*), which is normally the only plant on which butterfly larva can successfully feed and develop. Although the salt-spray meadow is important as the nursery area for the butterfly, it is a rather harsh environment for the adults. Upon emergence as adults, they generally move out of the meadows into the fringe of conifers or brush where there is shelter for more efficient heat conservation and nectar-gathering flights. This sheltered area also may be used for courtship and mating.

The loss of suitable habitat is unquestionably the main reason for the current Threatened status of the Oregon silverspot. Seaside meadow sites have been used for residential and business developments, lawns, parking, and recreation, along with excessive grazing and off-road vehicle travel. Secondary impacts include the introduction of exotic plants and suppression of naturally occurring fires (which results in succession of the salt spray meadows to brush and stunted woodland).

Initial recovery efforts will be oriented toward conserving the current viable populations and rehabilitating their deteriorating habitat. Additional research on the ecology of the Oregon silverspot will be necessary in order to develop long-term management plans for the butterfly and its habitat. Determining the number of populations and/or the amount of habitat necessary to insure the long-term survival of the butterfly will be key parts of the overall recovery program. Existing habitat should be protected from further degradation, an objective that may involve habitat manipulation to prevent succession of the meadows to brushfields. Controlled burning, scarification, chemical treatment, or other land manage-

ment techniques could be used if it is determined that they would not have any detrimental side-effects on the butterfly or its habitat. It is important that the use of herbicides and insecticides, which could have an obvious potential impact on the butterfly and its habitat, be carefully regulated. Growth of the violet (*V. adunca*) and some of the desirable nectar plants should be encouraged, and exotic plants found harmful to the habitat should be controlled.

Once these objectives are achieved, reintroduction and establishment of additional populations on secure habitat can be explored. A major effort by all those involved in the recovery program, including the Fish and Wildlife Service, Forest Service, Department of Defense, The Nature Conservancy, and other participants, will be necessary to insure consideration of the butterfly in resource planning for public lands. Although the long-term status of the species and its habitat on private lands is not well understood, these lands do hold promise as key butterfly habitat, and the cooperation of local private interests in development of management plans should be encouraged.

Details on the plan and its implementation can be obtained from the Portland Regional Director. (see page 2 for address).

Schaus' Swallowtail Butterfly

The Schaus swallowtail butterfly is known only from the southeastern tip of the Florida peninsula and the Florida keys, where it has always been considered rare and locally distributed. It was listed as Threatened under the Endangered Species Act in 1976.

Specific habitat requirements for the butterfly are unknown, although its

Continued on page 5



Schaus' swallowtail butterfly is known only from the southeastern tip of the Florida peninsula and the Florida keys.

Photo by George Krizek

Threat to California Least Tern Defused by Coordination

by Jack Fancher
Division of Ecological Services
Laguna Niguel (California) Field Office

In two successive nesting seasons, the California least tern has abandoned a protected and managed nesting area on Terminal Island, Los Angeles Harbor, in favor of nearby areas used by an Army Corps of Engineers contractor working on the Los Angeles Harbor Deepening Project (LAHDP). Only by close inter-agency coordination, often on short notice, have significant adverse impacts to the least tern been avoided. Significant projects cost escalation, shutdowns, and delays also have been avoided.

The California least tern was listed as Endangered in 1970. At that time, the population had declined to about 600 pairs, primarily due to nest site disruption and loss by human activities. It typically nests in coastal California from April through August, and returns to Central and South America to overwinter. Between 1970 and 1977, the least tern has nested at several locations on Terminal Island, reaching a peak of 85 nests with very good fledgling success in 1977.

The Corps of Engineers plans for the LAHDP included deepening the port's main channel and disposing the dredge spoil into a 190-acre area of harbor waters to create new land. In a 1978 biological opinion, the Service concluded that the proposed project would jeopardize the California least tern, primarily due to the filling of foraging areas near the nest sites and inadequate pro-

tection of these sites. Project plan revisions and a Corps-Service agreement resulted in a no-jeopardy opinion in 1979. Slight modifications were made in the proposed shape of the landfill and the timing of construction. A harbor water area was also to be altered to improve its value for least tern foraging. In addition, the agreement provided for least tern nesting areas on Terminal Island, and for a 7-year investigation of the bird's nesting and foraging ecology.

The protection and management of a 15-acre nesting area on Terminal Island began in 1979, concurrent with the study, and the actual project construction began in 1980. However, the least tern did not nest on Terminal Island during those 2 years. As allowed for in the agreement, the study then focused on other Los Angeles and Orange County nesting colonies. By 1981, the 15 acres had been fenced, cleared of weeds, covered with a veneer of sand, and arrayed with least tern decoys. That year, the terns did use the site. About 13 pairs were nesting there when, in June 1981, the colony was abandoned. Eggs and small chicks disappeared, indicating that rats and crows were the likely predators.

The California least terns began re-nesting at an unprotected, dusty, weed-dotted area adjacent to the Corps dredge discharge pipe and the landfill construction. This site was being used by the Corps for off-road movement of heavy equipment and dredge pipe sections between the staging area and the work area. It was also used for access to the dredge discharge pipe that ran along

its margin. The Harbor Department operated a gravel stockpile operation at the center of the 45-acre tract, and recreational anglers crossed the area to reach fishing spots.

Immediate action was needed to prevent the destruction of the new least tern nests. An Ecological Services biologist in the Laguna Niguel Field Office began discussions with the Corps' construction manager, the Los Angeles Harbor Department staff, and the California Department of Fish and Game to seek alternatives which would avoid nest site disturbance. As the result of close coordination, heavy equipment was rerouted, the nesting area was posted, and access was curtailed. The nesting area thereby was effectively protected from the gravest threats without interfering with the progress of the construction project. The ongoing open-water discharge of dredge spoil, not far away, offered no apparent impact upon least tern foraging since it occupied a relatively small portion of the bird's known feeding area.

Approximately 46 nesting attempts were made by California least terns at several different sites on Terminal Island in 1981. Some eggs were destroyed inadvertently by vehicles. Many chicks were hatched, but high mortality, due to predation first by crows or rats, then an American kestrel, contributed to poor fledgling success. The powdery dust on the nesting area also may have been a factor. Nevertheless, later observations of banded fledglings at Terminal Island indicated that the site had furnished potential recruits for the adult populations. The third year of the nesting and foraging study documented these events as well as significant findings from other major nesting colonies.

The 1982 California least tern nesting season began with the 190-acre landfill nearly half filled with dredge spoil, but still largely an inter-tidal mud flat with shallow open water. During the preceding winter, the Corps had unintentionally created a sandy knoll within the landfill by overdischarging at one point. This knoll, composed of clean sand and bivalve shell fragments, was above the reach of the tide. The discharge point had later been relocated elsewhere in the landfill, but the tailwaters flowed past the knoll.

Ten pairs of least terns took advantage of the sandy knoll when courtship began. Another ten pairs were observed courting and nest scraping within the 15-acre area, which had again been prepared and decoyed. Simultaneously, a local helicopter manufacturer was mak-



California least tern feeding its chicks.

Plans for Butterflies

Continued from page 3

dependence on hardwood hammocks is clear. Major factors affecting changes in population size and distribution are unclear, and it is unknown at what levels population numbers and distribution must be maintained to ensure viability. The recovery plan, therefore, emphasizes habitat protection and research on the species' population biology. Its objective is to prevent the extirpation of *Papilio aristodemus ponceanus* colonies and reestablish colonies where suitable.

During 1980 and 1981, known, confirmed and apparently viable breeding colonies of *P. aristodemus ponceanus* were restricted to a group of islands in Biscayne National Park. Colonies may possibly occur in other areas of the keys, although none is currently known.

Ponceanus numbers have historically been generally low, but fluctuations apparently do occur in large part due to the fact that the chrysalids may overwinter more than one year. In the early 1970's, the species was relatively common in Biscayne National Park, with numbers being especially high during 1972. Since then, however, the population, especially on Key Largo, has apparently been declining.

Three factors are possibly at fault for the severe range constriction and population decline of *ponceanus* during this century, especially since the early 1930's: (1) disruption and destruction of hammocks; (2) widespread aerial application of insecticides by the Monroe County Mosquito Control District; and/or (3) natural factors (weather, predation/parasitism, etc.). Collecting has not been a factor in the past, but will probably be so at the presently small population size. Insecticidal mosquito control may represent the most important and critical of those factors.

The role that habitat alteration has played in *ponceanus* distribution is difficult to determine. The butterfly apparently is now absent from several areas in which hardwood hammocks remain apparently undisturbed. The species may possess relatively subtle habitat requirements which are not yet understood.

The Schaus' swallowtail's primary host, torchwood (*Amyris elemifera* L.; Rutaceae) occurs in hammocks throughout the lower and upper keys and on the Atlantic coast of the mainland northward to Volusia County. Wild lime (*Zanthoxylum fagara* (L.) Sarg.; Rutaceae), a secondary host plant, has an even wider distribution. Given these data, it is clear that the historic range of

Continued on page 7



The Corps Terminal Island landfill construction in 1982 built up around the least tern nesting area.

ing occasional unauthorized test landings on underdeveloped harbor land areas, including the fenced area and drier portions of the landfill. Using aircraft registration information obtained through the Service's Office of Law Enforcement in Long Beach, Ecological Services personnel were able to contact the helicopter operator and secure his cooperation. Unfortunately, the unwitting disturbances that had already occurred apparently were too much for the terns, as nesting was not reinitiated at the fenced area during the 1982 season.

The nesting colony at the sandy knoll, on the other hand, continued to increase in numbers. Many of the adult terns had been banded in previous years, and some had been observed attempting to nest at other colonies earlier in the 1982 season. Predator problems at other traditionally important Los Angeles and Orange County colonies were causing some adults to reinstitute nesting at the sandy knoll. This site assumed even greater significance to overall least tern recovery when some major colonies in San Diego County suffered from reduced nesting success.

Several potential problems at the sandy knoll were brought to the attention of the Corps' construction manager by our Laguna Niguel staff. As the dredge discharged continued, it would wander unconstrained over the landfill and destroy the area where least terns were nesting. Also, rising water levels threatened to inundate nests. Lastly, direct disturbance by persons and vehicles could cause the birds to abandon the site. Through active and frequent coordination among Service, Corps, and California Fish and Game personnel, each problem was successfully addressed. The nesting colony was posted, vehicle access was curtailed, a weir in the landfill dike was constructed

to allow the escape of dredge tailwaters, and training dikes were constructed to divert the discharge away from the knoll. By late July, however, the landfill had been greatly built up and would either encroach upon the nesting area or require sandbagging to protect the nests. Fortunately, the least terns concluded their nesting activities first. Within days of the "all clear" message from the Service, the Corps resumed normal operations, obliterating the vacated nesting area without having incurred any abnormal project delays or expense.

The 1982 least tern nesting activities at Terminal Island were intensively studied by contractors to the Laguna Niguel Field Office. The study recorded more than 70 nests and, although some eggs were lost to one extreme high tide series and some to rats, fledgling success was good.

Banding efforts are yielding results useful in understanding least tern nesting behavior. The studies are also contributing to knowledge of nesting and foraging crucial to the successful management of their nesting areas and, ultimately, to recovery of this Endangered species. Several publications in scientific journals have already resulted from this research. The three remaining years of study called for in the Corps-Service agreement should continue this record of contribution.

Thanks to the consultation framework in Section 7 of the Endangered Species Act, and to the sincere, capable efforts of the people involved, conservation of the Endangered bird was compatible with the harbor project. It is through such efforts that we hope that the California least tern population, estimated at 975 pairs in 1981, will reach the recovery plan goal of 1200 pairs at 20 stable nesting colonies and return from the brink of extinction.

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

CITES Amendments Proposed by Service

Following a review of the status of wildlife and plant species that are native to the United States listed on Appendices I and II of CITES, the Service announced its proposed changes to these Appendices (F.R. 11/17/82). They will be submitted for consideration by the CITES nations at the next regular meeting in Botswana in April 1983.

The Service's review was conducted in coordination with the Canadian Wildlife Service and the Dirección General de la Fauna Silvestre of Mexico. In developing proposals, the Service considered comments and information received in response to earlier notices in the *Federal Register*, and the views of the Central Committee, a group representing various CITES parties organized to appraise and coordinate such reviews.

Candidate Species

The Service's November *Federal Register* rule presents a discussion of the proposals, comments received following earlier notices, and the reasons for the Service's final decisions. A summary of the proposals follows:

- **Gray wolf (*Canis lupus*)**—The Service proposes to remove Alaskan and Canadian populations of this species from Appendix II. It does not anticipate that this action will create trade problems

concerning wolf pelts from other populations since both Alaskan and Canadian Provincial game departments have established tagging and documentation systems.

- **Bighorn sheep (*Ovis canadensis*)**—The Service proposes to delist (remove from Appendix II) the U.S. and Canadian populations, which are now listed only because of similarity of appearance to the Mexican population. The Service anticipates no trade problems given the strict control of sport hunting in all three countries.

- **Grizzly and brown bears (*Ursus arctos*)**—The Service proposes to remove North American populations

from Appendix II on the grounds that they are listed only for reasons of similarity of appearance, they are protected by State and Federal law in the United States and the Mexican population appears to be extirpated.

- **Canadian lynx (*Lynx canadensis*)**—The Service proposes to remove the species from Appendix II. The species is under State and Provincial management that should prevent its becoming threatened with extinction by international trade.

- **River otter (*Lutra canadensis*)**—The Service proposes to list this species in Appendix II for reasons of similarity of

Continued on page 8

Regional Briefs

Continued from page 2

tained and fed for 7 weeks. The released birds were followed via radio telemetry for 3 days. They were last located heading in a northerly direction. It is hoped that these birds will return to nest in Arkansas when they reach breeding age (4-5 years old). Following this successful first attempt, more eagles will be hacked in the next 2 summers.

The final report, "Status Survey of the Cahaba Shiner and Goldline Darter in the Cahaba River," has been received from Dr. W. Mike Howell, Samford University. This effort fills a data gap which existed along the Cahaba River from Trussville to Booth Ford, Alabama. This information, along with a recently contracted study with the Alabama Geological Survey for a historical water quality analysis of the Cahaba River and information already on hand, should provide the necessary data to make a decision on listing strategies.

The U.S. Army Corps of Engineers Waterways Experiment Station has completed the concept design for artificial gravel bars in the Tombigbee River. This is part of a conservation plan being developed for the Tennessee-Tombigbee Waterway Project and a number of candidate mussel species occurring in the Tombigbee River. The next step would be engineering design, cost estimates, construction, and evaluation.

Region 6—Prior to finding the black-footed ferret (*Mustela nigripes*) population near Meeteetse, Wyoming, in 1981, most research on ferrets had occurred in Mellette County, South Dakota, in the late 1960's and early 1970's. The last confirmed ferret sighting in Mellette County was in 1972. During the summer of 1982, two students from South Dakota State University spent more than 650 man-hours searching for ferret sign in

prairie dog towns in Mellette County. They also logged more than 630 man-hours spotlighting for ferrets at night. No conclusive evidence was obtained to indicate that ferrets still exist there.

The Yellowstone Managers Committee met in Jackson, Wyoming, in early November. The management of grizzly bears (*Ursus arctos horribilis*) was a major item of discussion. There is great concern over the number of grizzlies being lost from the population because of human-induced mortality. The grizzly bear population in the Yellowstone ecosystem is estimated to be +200 animals, and the trend is still downward. There may be no more than 30 adult females in the population. Federal land management agencies and State game and fish departments are starting to work together to greatly reduce annual grizzly mortalities caused by humans.

In an effort to retard any genetic drift in greenback cutthroat trout (*Salmo clarki stomias*) broodstock held at Bozeman Fish Cultural Development Center in Montana, milt was taken from wild greenbacks for use in fertilizing some 20,000 ova. Eight hundred greenbacks obtained from this spawn were retained at the center for future broodstock. The remaining fish from this spawn composed part of the 25,500 greenbacks which were released into 7 areas within the species' native range.

An experimental catch-and-keep angling program for the introduced brook trout (*Salvelinus fontinalis*) and a catch-and-release program for the native greenback cutthroat trout within beaver ponds on Hidden Valley Creek (Rocky Mountain National Park) was opened on August 1, 1982. Initial results indicate that greenbacks are extremely susceptible to angling pressure. Anglers released 60 percent of the brook trout and 99.99 percent of the greenbacks.

RULEMAKING ACTION - December 1982

Malheur Wire-Lettuce

Continued from page 1

(for zeolites) in the habitat area is not imminent.

An immediate threat to the taxon is competition from weedy grasses, especially the introduced cheat grass (*Bromus tectorum*) with which it competes for moisture in the spring when both species are in seeding stage. Cheat grass invaded the area following a controlled burning in 1972 which accidentally swept the habitat area. Grazing by small herbivores, presumed to be black-tailed jack-rabbits (*Lepus californicus*), is also detrimental to the wire-lettuce.

In 1974, the BLM established a 160-acre Scientific Study Area that includes the habitat area. The study area has been completely fenced, preventing grazing of the species by livestock. The BLM has also monitored the status of *S. malheurensis*.

S. malheurensis is a member of the sunflower family (Asteraceae) and grows to 5 dm tall. It has a basal rosette of leaves, a much branched stem with scale-like leaves, and numerous pink to white (rarely yellow-orange) flower heads. It is an annual species and the numbers of individual plants vary

greatly from year to year depending on the amount of precipitation prior to and during the spring growing season. It flowers in July and August.

The first discovery of *S. malheurensis* was made in 1966, when seeds of this species were collected along with those from a population of the parental plant, *S. exigua* ssp. *coronaria*. Both taxa are found together, at the northern end of the range of the parental subspecies.

Studies by Dr. Leslie Gottlieb of the University of California, Davis, have demonstrated consistently distinguishable field characteristics, physiological differences, and reproductive isolation between these two taxa, thus recognizing *S. malheurensis* as a new species. It has been considered of significant scientific and educational value in understanding the processes of speciation, especially the sympatric evolution of a diploid species.

Regulatory History

This plant was first proposed by the Service for protection under the Act on June 15, 1976. Because the Endangered Species Act Amendments of 1978 required that all proposals over 2 years

old be withdrawn, the Service published a notice of withdrawal that included this plant on December 10, 1979.

In August 1980 new field work was carried out at the site of the *S. malheurensis*. It was discovered that the exotic cheat grass had heavily invaded the area. Only fewer than several dozen wire-lettuce plants could be found after a diligent search. Previously as many as 750 individuals of *S. malheurensis* were estimated to have grown at the site in any one year. On October 31, 1980, the Service published a second proposed rule on the plant, advising that sufficient new information was on file to repropose the *Stephanomeria*. Critical Habitat was also proposed on October 31, 1980, for the first time.

This listing took advantage of a provision of the Endangered Species Act Amendments of 1982, which extended the deadline for a final rule from October 31, 1982 to October 13, 1983. The 1982 Amendments state that all species in proposed status at the time the new legislation was signed are to be treated as if proposed on the date of enactment of these amendments, October 13, 1982.

New Series to Clarify Wildlife Permitting Procedures

In recent years the U.S. government seized annually around 2,000 wildlife shipments which failed to meet permit requirements. In an effort to reduce that number, the Association of Systematics Collections (ASC), with the assistance of the Service's Federal Wildlife Permit Office and the Pet Industry Joint Advisory Council, has begun production of a reference series that will provide a simple, streamlined source of permit information for those who routinely deal with wildlife and wildlife products such as furs, leather and ivory.

The series, *Controlled Wildlife*, will serve the need of both industry and government for a single, comprehensive source of information on the regulations, permits and agencies that make up our national wildlife policy. The series is divided into three volumes.

The first volume, *Federal Permit Procedures*, contains detailed summaries of the Federal statutes and regulations that control the use of wildlife and wildlife products; samples of both foreign and domestic permits, with instructions for completing them properly; and addresses of important

agencies, both foreign and domestic.

Volume two, *Federally Controlled Species*, lists the species that are controlled by the Federal government and the laws that govern their use.

State Permit Procedures 1983, the third volume in the series, will contain information on State non-game wildlife laws and permit requirements, cooperative agreements between the Federal government and individual States, and lists of species protected by each State.

In addition, an *Updating Service* will be included to keep purchasers advised of changes in regulations and procedures.

The work of compiling and organizing this data is being performed by the ASC, a non-profit association of natural history museums and scientific societies. Work has already begun on the first two volumes, which are scheduled for publication in January 1983. The third volume will be published in April 1983.

For further information write: CONTROLLED WILDLIFE, Association of Systematics Collections, Museum of Natural History, University of Kansas, Lawrence, KS 66045.

Plans for Butterflies

Continued from page 5

ponceanus has not been limited by the range of these two host plants.

Nearly all *ponceanus* sightings and collections have been concentrated from late April through mid-July, with most occurring during May, suggesting that the butterfly has but a single annual generation. Occasional adults are found in late July through September.

For more information on the Schaus' Swallowtail Butterfly Recovery Plan, contact the Atlanta Regional Director (see page 2 for address).

Puerto Rican Parrot

The October 1982 BULLETIN included a feature on the Puerto Rican parrot (*Amazona vittata*). Please refer to this article for information on research and recovery efforts for this bird.

* * *

Copies of these plans, and of all approved recovery plans, will be made available for purchase from the Fish and Wildlife Reference Service, Unit i, 3840 York Street, Denver, Colorado 80205 (800/525-3426). A four-to-six month printing time must be allowed following the date a recovery plan is approved by the Director. Please understand that you might experience a delay when ordering newly approved plans.

CITES NEWS

Continued from page 6

appearance, only. It is now listed because of potential threat to its survival from international trade, as well. Biological data are sufficient to show that the species is not potentially threatened with extinction by international trade.

- Tule white-fronted goose (*Anser albifrons gambelli*)—The Service proposes to remove this subspecies from Appendix II because it is not readily distinguishable from the more common white-fronted goose, *A. albifrons frontalis*, and because it is given as much protection from overexploitation from trade as possible under existing Migratory Bird Treaties.

- Mona Island boa and Virgin Islands boa (*Epicrates monensis*)—The Service proposes to transfer these snakes from Appendix II to Appendix I on the grounds that both subspecies (*E. monensis monensis* on Mona Island and *E. monensis granti* on the Virgin Islands) are threatened with extinction and they are similar in appearance to the Puerto Rican boa (*E. inornatus*), which is listed in Appendix I.

- Blue pike (*Stizostedion vitreum glaucum*)—The Service proposes to remove this subspecies from Appendix I because no specimens have been found since 1965 despite extensive sampling of fish stocks. The Service has proposed to delist the fish under the Act (see June 1982 BULLETIN).

- Longjaw cisco (*Coregonus alpenae*)—The Service proposes to remove this species from Appendix I because it is likely extinct. This fish was also proposed to be delisted under the Act (see June 1982 BULLETIN).

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	18	223	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	8	6	55	8	4	0	81
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	1	0	0	3
Insects	7	0	0	4	2	0	13
Plants	56	2	0	8	1	2	67
TOTAL	199	44	444	47	7	24	765

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 3 animals
6 plants

Number of Critical Habitats listed: 54
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 71
Number of Cooperative Agreements signed with States:

38 fish & wildlife
11 plants

November 30, 1982

- North American cacti (Family Cactaceae) —The Service proposes to transfer 71 taxa of cacti native to the U.S. or Mexico, or both, from Appendix II to Appendix I on the grounds that their wild populations are so rare or depleted they are actually or potentially threatened by international trade. The original proposal contained 119 taxa to be transferred. However, a number of Mexican taxa were deleted because of insufficient population data or because it appears that the species is more common than initially thought.

- Luquillo Mountains Lepanthes (*Lepanthes eltoroensis* Stinson, Family Orchidaceae)—The Service proposes to transfer this orchid from Appendix II to Appendix I because of taking of this

plant from its very restricted habitat.

- *Solanum "sylvestre"* (family Solonaceae)—The Service proposes to remove this name from Appendix II on the grounds that the name is untraceable in the modern literature and never has been used or validly published as a scientific name.

The Service has decided not to propose changes included in the original proposal concerning the swift fox (*Vulpes velox*) and the pronghorn antelope (*Antilocapra americana*).

Copies of the proposals are available upon request from the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240. Please send correspondence regarding these proposals to the same address.

December 1982

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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PUBLIC DOCUMENTS
DEPOSITORY ITEM

MAY 4 1983

INDEX

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January 1982 - December 1982
Volume VII, Numbers 1-12



Aconitum noveboracense, in Driftless Area, Oct, 2

Agrostis rossiae, Yellowstone management and protection, May, 4

'Akoko, 'Ewa Plains. See Euphorbia skottsbergii var. kalaeloana

'Alala. See Crow, Hawaiian

Albatross, short-tailed, status report, Feb, 7

Alligator, American: special rule to be reviewed, Aug, 4; proposed reclassification of TX population, Sep, 8; proposed export findings, Sep, 10

Amazona vittata. See Parrot, Puerto Rican

Amphipod, Hay's spring: E listing, habitat, photo, Mar, 4; habitat conservation, Sep, 11

Anas oustaleti. See Mallard, Marianas

Anguispira picta. See Snail, painted snake coiled forest

Anser albifrons gambelli. See Goose, Tule white-fronted

Antrolana lira. See Isopod, Madison Cave

Ash Meadows, NV, emergency rule to protect fishes, habitat destruction stopped, photos, Jun, 1

Astragalus montii, management agreement, May, 4

Bat, gray: recovery plan approved, cave habitat protected, Aug, 6; new maternity colony discovered, Dec, 2

Bat, Indiana, gating of hibernation cave, Dec, 2

Bat, spotted, status review, Apr, 5

Bear, Alaskan brown: proposed export findings, Sep, 10; proposed CITES change, Dec, 6

Bear, Grizzly: final recovery plan, photo, Mar, 8; Yellowstone Ecosystem management meetings, Apr, 3, 6, Dec, 6; Technical Workshop, Oct, 8; Northern Ecosystems meeting, Nov, 6; proposed CITES change, Dec, 6; Yellowstone population, Dec, 6

Bentgrass, Ross. See Agrostis rossiae

Betula uber: recovery plan completed, first for a tree, Feb, 7; recovery plan approved, background on, research, photo, Apr, 1, 4, 5; seedling propagation, Jul, 4; seedling establishment, Oct, 7

Bidens cuneata, E proposal, Hawaiian habitat, drawing, Sep, 5

Birch, Virginia round-leaf. See Betula uber

Birds: forest and sea surveys in Marianas, May, 2, Aug, 2

Bird's beak, palmate. See Cordylanthus palmatus

Boas, Mona and Virgin Islands, proposed CITES changes, Dec, 8

Bobcat: controversy over CITES listing, Jan, 6; export rule suspended, Feb, 3; proposed removal from Appendix II of CITES, Feb, 3, 8; House testimony on export, Mar, 11; export rule suspended, Aug, 5; proposed export findings, Sep, 9

Bobwhite, masked: TX bobwhites as foster parents for, Mar, 2; summer call counts and releases in AZ, Mexico, Sep, 11

Borax Lake, designated critical habitat for chub, unusual ecosystem, photo, Oct, 1, 4

Branta canadensis leucopareia. See Goose, Aleutian Canada

Buteo solitarius. See Hawk, Hawaiian

Butterfly, mission blue, habitat conservation plan, Jun, 2

Butterfly, Oregon silverspot: habitat and status survey, Nov, 2; recovery plan approved, photo, Dec, 3

Butterfly, Schaus swallowtail, recovery plan approved, habitat, background, photo, Dec, 3, 5, 7

Butterfly plant, Colorado. See Gaura neomexicana ssp. coloradensis

Cacti, North American, proposed CITES change, Dec, 8

Cactus, purple-spined hedgehog. See Echinocereus englemanni var. purpureus

Cactus trade meeting, Jan, 7

Canis lupus. See Wolf, gray

Canis lupus baileyi. See Wolf, Mexican

Canis rufus. See Wolf, red

Canthyria sp. See Mussel, Tar River spiny

Cavefish, Alabama, recovery plan approved, background, Oct, 7

Chastmistes cujus. See Cui-ui

Chelonia mydas. See Turtle, green sea

China Hat, CA, unique area, Jun, 2

Chub, bonytail, summary report on field investigations, Sep, 11

Chub, Borax Lake, E listing, background, critical habitat, Oct, 1, 4

Chub, humpback: from AZ hatchery released in UT with coded tags, Feb, 7; complex court cases over Colorado River stocking program, Feb, 7; summary report on Colorado River field investigations, Sep, 11

Chub, Mohave tui, artificial pond population extirpated, Feb, 2

Cinquefoil, Robbins. See Potentilla robbinsiana

Cisco, longjaw, proposed deregulation, extinct, Jun 3, Dec, 8

CITES. See Convention on International Trade in Endangered Species of Wild Fauna and Flora

Colinus virginianus ridgwayi. See Bobwhite, masked

Colorado River Fishery Project: Monitoring Program, Jun, 5; findings of final report, Sep, 11

Columba inornata wetmorei. See Pigeon, Puerto Rican plain

Condor, California: pair destroys own egg, Mar, 1; ravens destroy second egg, May, 11; one chick confirmed, one more possible, Jun, 2; captured chick doing well, San Diego captive breeding program, photos, Sep, 3; habitat discovered by radio telemetry, Nov, 1

Conradilla caelata. See Mussel, birdwing pearly

Conservation: Western Hemisphere Convention, international cooperation on habitat destruction, training wildlife professionals, recovery program research, Jan, 4-5, 7; special foreign currency excess funds used by international program, examples, photos, May, 9-11; State income tax check-off programs, photo, chart, Nov, 4-5

Consultation process: implementation of amendments on, Jan, 1; amendments bring changes, Nov, 7

Controlled Wildlife, permit reference series, Dec, 7

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): management and functions of, Feb, 3; proposed removal of bobcat from Appendix II, Feb, 3, 8; House testimony proposes amendments, reservations, "no detriment," bobcat issue, Mar, 1, 5, 11, preliminary proposals to amend appendices, Mar, 5; data request on appendices additions, Mar, 5; reauthorization-hearings testimony on implementation, "no detriment" findings, May, 1, 7; new guidelines for Appendix II species export, May, 5; review of North American plants, May, 5, 12; export findings for 6 species, Sep, 10; Botswana to host 4th meeting, Sep, 10; 1982 amendments affect implementation, Nov, 8; proposed changes to Appendix I and II, Dec, 6, 8

Cooperative Research Units programs on: E mussels in VA, photos, Mar, 6-7; Hawaiian hawk, photos, Sep, 4, 6

Cordylanthus palmatus, only known location plowed, Jul, 2

Coregonus alpenae. See Cisco, longjaw

Corvus tropicus. See Crow, Hawaiian

Crane, Mississippi sandhill, release of Patuxent-bred radio-equipped, Apr, 3, Dec, 2

Crane, whooping: NE management plan, Mar, 3; Aransas flock monitoring, photo, Apr, 3; observed at Quivira, KS refuge, Jun, 5; summary of recent sightings, Jul, 4; one found dead, Aug, 5; Aransas habitat study, Oct, 2; migration tracking program, Oct, 7-8

Critical Habitat: criticism of designation, Jan, 1, 3; Amendments of 1982 make changes in designation, Nov, 1, 7

Crow, Hawaiian, recovery plan approved, Nov, 11-12

Cui-ui, Pyramid Lake spawning, Jul, 2

Culebrita Island, to remain in Refuge System, Mar, 3

Cuneata bidens. See Bidens cuneata

Curlew, Eskimo, none found, Feb, 7

Cyprinodon nevadensis calidae. See Pupfish, Tecopa

Cyprinodon nevadensis mionectes. See Pupfish, Ash Meadows Amargosa

Dace, Ash Meadows speckled: emergency protection, habitat destruction, drawing, Jun, 1, 3-4; status survey, Aug, 3

Dace, Kendall Warm Springs, recovery plan approved, habitat protection, Aug, 7-8

Daisey, Maguire fleabane. See Erigeron maguirei

Darter, goldline, status survey, Dec, 6

Darter, leopard, litigation on listing, May, 3

Darter, Maryland, final recovery plan, photo, Mar, 8-9

Deer, Key, artificial feeding prohibited, photo, May, 3

Dendroica kirtlandii. See Warbler, Kirtland's

Department of the Interior, Endangered Species Act review, Jan, 1, 8

Diomedea albatrus. See Albatross, short-tailed

Discus macclintocki. See Snail, Iowa Pleistocene

Driftless Area, relict species in, Oct, 2

Drymarchon corais couperi. See Snake, eastern indigo

Eagle, bald: shooting loses up in ME, Jan, 2-3; CA mid-winter surveys, 1979-1981, Feb, 2; guide for land management around nests and roosts, Feb, 2; ospreys as foster parents, Feb, 7; TN hacking program, photo of released eaglet, Feb, 4; AZ territories, Mar, 2; NJ management plan, Mar, 3; fine for shooting, reintroduction program in CA, Apr, 2; AZ relocation of chicks, Apr, 3; MT Working Group, Apr, 6; MO nesting, May, 3; first AR nesting in 30 years, Jun, 5; Chesapeake Bay recovery plan approved, Jun, 5; Bicentennial Year, Chesapeake Bay area productivity, photo, Jul, 1; breeding success in AZ and TX, Jul, 2; MA hacking program, Jul, 2; first confirmed MO hatching in 40 years, Aug, 3; two MA birds fitted with radio-transmitters, Sep, 11; Southwestern Recovery Plan approved, Oct, 6-7; AZ nest elevated above rising reservoir, Oct, 2; CA islands reintroduction results, Nov, 2; meeting of recovery team coordinators, Nov, 3; Yellowstone Ecosystem results, Nov, 6; successful AR nestings and hackings, Dec, 2, 6

Echinocereus englemanni var. purpureus, individuals found, taxonomic issues, Oct, 7

Egypt, U.S. aid to wildlife conservation, May, 9-11

Elephant, African, revised rule on ivory trade, Aug, 5

Endangered species: final recovery plans for 5 species, photos, Mar, 8-10; review of those listed in 1977, Oct, 3; expiration of proposal on U.S. population of foreign species, Oct, 4

Endangered Species Act of 1973: early hearings begin reauthorization process, implementation of amendments, critical habitat issue, testimony of various groups, CITES bobcat issue, Jan, 1, 3, 6; Interior Department completes regulatory review, State comments on, Jan, 1, 8; House hearings on reauthorization testimony on CITES amendments, bobcat export, economic analyses, Mar, 1, 5, 11; Senate hearings on reauthorization and amendments, testimony on experimental populations, listing-process expedition, CITES implementation, consultations, exemptions, other concerns, May, 1, 6-8; House and Senate pass reauthorization bills, Jun, 1; President signs Amendments of 1982, changes made in listing, consultation, exemptions, incidental taking and other provisions, appropriations through 1985, Nov, 1, 7-8

Endangered Species Technical Bulletin, microfiche available, Nov, 11

Enhydra lutris nereis. See Otter, Southern sea

Epicrates monensis. See Boas

Eretmochelys imbricata. See Turtle, hawksbill sea

Erigeron maguirei, only 7 plants found, Jul, 4

Etheostoma sellare. See Darter, Maryland

Euderma maculatum. See Bat, spotted

Euphorbia skottsbergii var. kalaeloana:

5,000 plants discovered in Hawaii, Jan, 2; E listing, background on, Sep, 5, 7; cooperation with Corps of Engineers on harbor development habitat, Nov, 2
Exemption process, changes in, Nov, 7
"Experimental population" concept, May, 1, 6-8

Falcon, peregrine: Peregrine Fund hatched 73 in CO, Jan, 3; AK blood samples show pesticides, Feb, 7; survey on owl predation, Apr, 3; eggshells thicker, DDE content lower, May, 3; aerial surveys of OR eyries, Jul, 2; AK female nesting 130 miles from natal site, Jul, 4; 3 captive-bred chicks transported to OR, 1 survives, Aug, 3; 5 hacked in MN, Aug, 3; hacking, reintroduction, nesting successes in CA, ID, WA, Sep, 2; results from AK survey and bandings, Sep, 11; Mexico migration from CA, OR and WA hacking results, Oct, 2; AK survey results, Oct, 8; Ft. Collins captive breeding and release results, Nov, 6; TX encounters of AK-banded, Nov, 6; Alaskan and Pacific Coast Recovery Plans approved, subspecies, photo, Nov, 9

Falco peregrinus anatum. See Falcon, peregrine

Felis concolor coryi. See Panther, Florida

Felis pardalis. See Ocelot

Ferret, black-footed: recent deaths, Mar, 3; WY recovery agency, Apr, 6; project to stimulate, May, 3; 9 sighted, Jun, 5; WY survey, Aug, 5; NM surveys, Oct, 2; none found in SD survey, Dec, 6

Fishes: emergency protection for 2 Ash Meadows, NV species, drawings, Jun, 1, 3-4; Colorado River Fishery Project, Jun, 5, Sep, 11

Foreign species, proposal on U.S. population expires, Oct, 4

Forests in Latin America, destruction of, photos, Jan, 4-5, 7

Forfeited wildlife products, sale of, Sep, 9

Four O'clock, Macfarlane's. See Mirabilis macfarlanei

Frog, Pine Barrens tree. See Treefrog, Pine Barrens

Fusconaia edgariana. See Mussel, shiny pigtoe

Gambusia, Amistad, captive populations lost, possible extinction, Sep, 11

Gambusia, Clear Creek, recovery plan approved, Feb, 1

Gambusia heterochir. See Gambusia, Clear Creek

Gaura neomexicana ssp. coloradensis, protection on WY military base, Mar, 3

Gecko, Monito, E listing, critical habitat, photo, Nov, 3

Gila bicolor mohavensis. See Chub, Mohave tui

Gila boraxobius. See Chub, Borax Lake

Gila cypha. See Chub, humpback

Gila elegans. See Chub, bonytail

Ginseng, American. See Panax quinquefolius

Goose, Aleutian Canada: field activities for recovery effort, Feb, 7; killed by mink, Mar, 3; Japan asks for breeding

pair, Apr, 6; sightings on many islands, Jul, 4; triennial survey of Buldir breeding colony, Aug, 5; Agattu Island release, Sep, 11; co-op monitoring on OR coast, Dec, 2

Goose, Tule white-fronted, proposed CITES change, Dec, 8

Groundsel, San Francisco Peaks. See

Senecio franciscanus

Grus americana. See Crane, whooping

Grus canadensis pulla. See Crane,

Mississippi sandhill

Gymnogyps californianus. See Condor, California

Habitat destruction, in Latin America, as conservation threat, photo, Jan, 4-5, 7

Haliaeetus leucocephalus. See Eagle, bald

Hawk, Hawaiian, Co-op Unit research on, nesting, feeding, radio-telemetry, future for, photos, Sep, 4, 6

Hedeoma apiculatum, T listing, critical habitat, Aug, 4

Hyla andersonii. See Treefrog, Pine Barrens

Income tax check-offs for State programs, chart, Nov, 4-5

India, U.S. aid to wildlife conservation program, photos, May, 10-11

International Affairs Office: Western Hemisphere Convention, cooperation on wildlife conservation, Jan, 4-5, 7; Special Foreign Currency Program utilizes excess funds for conservation in other countries, May, 9-11

'Io. See Hawk, Hawaiian

Isopod, Madison Cave, T listing, background, photo, Oct, 4

Isopod, Socorro, final recovery plan, Mar, 10

Isotria medeoloides, E listing, State agreements on protection, photo, Sep, 1

Ivory, revised rule on U.S. import, Aug, 5

Jantzen, Robert A., testimony on Endangered Species Act reauthorization, Jan, 1, 3

Kangaroos, interstate trade in hides and parts authorized, Jan, 7

Kite, Everglades, new FL nesting area, Aug, 3, 5

Ladies' tresses, Navasota. See Spiranthes parksii

Latin America, international cooperation on conservation problems, habitat destruction, training wildlife professionals, recovery program research, Jan, 4-5, 7

Leopard, reclassified as T in southern Africa, Feb, 3, 6

Lepanthes, Luquillo Mountains. See

Lepanthes eltoroensis

Lepanthes eltoroensis Stinson, proposed CITES change, Dec, 8

Lepidochelys kempii. See Turtle, Kemp's
Ridley sea
Lepidochelys olivacea. See Turtle, Olive
Ridley sea
Lepidomeda vittata. See Spinedace, Little
Colorado River
Listing process: implementation of amend-
ments on, Jan, 1; reauthorization-hear-
ings testimony on, May, 1, 6-7; Amend-
ments of 1982 render more efficient,
Nov, 1, 7
Lizard, Coachella Valley fringe-toed,
habitat acquired for development, May, 2
"Lower life forms," conservation issue,
Jan, 3
Loxodonta africana. See Elephant, African
Lutra canadensis. See Otter, river
Lynx: proposed export findings, Sep, 10;
proposed CITES change, Dec, 6

Macropus fuliginosus. See Kangaroos
Macropus giganteus. See Kangaroos
Madtom, smoky, status review, Jul, 3
Mallard, Marianas, captive pair dies, none
found in wild, Aug, 2-3
Manatees, West Indian: FL die-off, cause
unknown, Mar, 3; comprehensive work
plan approved, photo, Mar, 10; die-off
continues, May, 1
Mariana Islands, forest bird survey, May, 2,
Aug, 2
Megaleia rufa. See Kangaroos
Megaptera novaeangliae. See Whale, humpback
Melospiza melodia graminea. See Sparrow,
Santa Barbara song
Mexico, recovery program research, Jan, 5, 7
Milk-vetch, heliotrope. See Astragalus
montii
Mirabilis macfarlanei, recovery plan review
draft, background on, Sep, 2
Mollusks, TVA field study on, Feb, 2, 7
Monkshood, northern wild. See Aconitum
noveboracense
Mouse, Choctawhatchee beach, status review,
Nov, 3
Mouse, Perdido Key beach, status review,
Nov, 3
Mussel, birdwing pearly, TVA study, Feb,
2, 7
Mussel, Cumberland monkeyface pearly, TVA
study, Feb, 2
Mussel, shiny pigtoe, VA research, photo,
Mar, 6-7
Mussel, Tar River spiny: status review,
photo, Apr, 5; individual found, Sep, 11;
6 more found, Oct, 7
Mussels: VA co-op fishery research on E
species, typical habitat, host fish,
recovery plan, photos, Mar, 6-7; Tombig-
bee River artificial gravel bars, Dec, 6
Mustela nigripes. See Ferret, black-footed
Mycteria americana. See Stork, wood
Myotis grisescens. See Bat, gray
Myotis sodalis. See Bat, Indiana

National parks, CA conference on research
and resource management, Apr, 6
Nature Conservancy, protection of unlisted
plants, Jan, 3
Notropis simus. See Shiner, bluntnose
Noturus baileyi. See Madtom, smoky
Numenius borealis. See Curlew, Eskimo

Ocelot: pair radio-collared in TX, Apr, 2;
U.S. population gets E classification,
photo, Aug, 1; survey expanded to Laguna
Atascosa refuge, photo, Nov, 2, 6
Odocoileus virginianus. See Deer, Key
Orchids: TX species listed as E, photo,
May, 1, 4; E listing for whorled pogonia,
photo, Sep, 1
Orthorcarpus campestris var. succulentus,
discovery in China Hat, CA, Jun, 2
Otter, river: proposed export findings,
Sep, 10; proposed CITES change, Dec, 6, 8
Otter, southern sea, final recovery plan,
photo, Mar, 9-10, May, 2
Ovis canadensis. See Sheep, bighorn
Owl's clover, succulent. See Orthorcarpus
campestris var. succulentus

Pakistan, U.S. aid to wildlife conservation,
May, 10-11
Palila, eradication of predators, Mar, 2
Panax quinquefolius: proposed export
findings, Sep, 10; final export findings,
Nov, 9
Panicgrass, Carter's. See Panicum carteri
Panicum carteri, comment period reopened,
Aug, 4
Panther, Florida: recovery plan approved,
Jan, 6; radio-collaring, Apr, 3; radio-
collared found dead, Jun, 5
Panthera pardus. See Leopard
Papilio aristodemus ponceanus. See Butter-
fly, Schaus' swallowtail
Parks, World National Parks Congress,
Sep, 10
Parrot, Puerto Rican, recovery program
progress, captive production, surrogates,
increased egg production, photo, Oct, 5-6
Pecos River, bluntnose shiner in, Sep, 10-11
Pennyroyal, McKittrick. See Hedeoma
apiculatum
Percina pantherina. See Darter, leopard
Permits: for E and T species activity
revised, Aug, 4; reference series to
clarify procedures, Dec, 7
Peromyscus polionotus alloparys. See Mouse,
Choctawhatchee beach
Peromyscus polionotus trissyllepsis. See
Mouse, Perdido Key beach
Phacelia argillacea, recovery plan approved,
Jun, 5
Phacelia, clay. See Phacelia argillacea
Phacelia formosula, E listing, background
on, photo, Sep, 7-8
Phacelia, North Park. See Phacelia
formosula
Picoides [=Dendrocopos] borealis. See
Woodpecker, red-cockaded
Pigeon, Puerto Rican plain, recovery plan
approved, photo, Nov, 10
Pike, blue, proposed deregulation, extinct,
Jun, 3, Dec, 8
Pitcher plant, Green. See Sarracenia
oreophila
Plants: on CITES list reviewed, May, 5,
12; action on 3 HI species, drawings,
Sep, 5, 7
Plebejus incaridoes missionensis. See
Butterfly, mission blue
Poecilopsis occidentalis. See Topminnow,
Gila
Pogonia, small whorled. See Isotria
medeoloides

- Potentilla robbinsiana: public information and education on, Apr, 3; draft recovery plan, Jul, 2, 4
- Protected areas, international Congress on, Sep, 10
- Psittirostra bailleui. See Palila
- Ptychocheilus lucius. See Squawfish, Colorado River
- Pupfish, Ash Meadows Amargosa: emergency protection, habitat destruction, drawing, Jun, 1, 3-4; status survey, Aug, 3
- Pupfish, Tecopa, removed from ES list, extinct, Feb, 1, 7-8
- Quadrula intermedia. See Mussel, Cumberland monkeyface pearly
- Rail, light-footed clapper, Mexican surveys, Jan, 2
- Rallus longirostris levipes. See Rail, light-footed clapper
- Rat, Morro Bay kangaroo, habitat-rehabilitation funds, Apr, 2
- Recovery plans: implementation of amendments on, Jan, 1; list of available plans with prices, Nov, 11
- Recovery programs in Latin America, international cooperation, Jan, 5, 7
- Review of species listed in 1977, Oct, 3
- Rhinichthys osculus nevadensis. See Dace, Ash Meadows speckled
- Rhinichthys osculus thermalis. See Dace, Kendall Warm Springs
- Rostrhamus sociabilis plumbeus. See Kite, Everglade
- Sale of forfeited wildlife products, Sep, 9
- Salmo clarki stomias. See Trout, greenback cutthroat
- Salmo gilae. See Trout, Gila
- Salvelinus fontinalis. See Trout, brook
- Sarracenia oreophila, review draft of recovery plan, litigation, Dec, 2
- Schiedea, Diamond Head. See Schiedea adamantis
- Schiedea adamantis, E proposal, habitat, drawing, Sep, 5
- Senecio franciscanus, proposed T, background, habitat, photo, Dec, 1
- Sheep, bighorn, proposed CITES change, Dec, 6
- Shiner, bluntnose: data for possible listing, Jan, 2; subspecies extant in Pecos River, Sep, 10-11
- Shiner, Cahaba, status survey, Dec, 6
- Shrew, San Bernadino dusky, status survey, Sep, 10
- Shrew, Santa Catalina, status survey, Sep, 10
- Shrew, Suisun, status survey, Sep, 10
- Snail, Chittenango ovate amber, draft recovery plan, Jan, 2, Oct, 7
- Snail, flat-spined three-toothed, draft recovery plan, Oct, 7
- Snail, Iowa Pleistocene, in Driftless Area, Oct, 2
- Snail, painted snake coiled forest, recovery plan approved, photo, Nov, 10-11
- Snake, eastern indigo, recovery plan approved, Jun, 6
- Solanum "sylvestre", name removal, Dec, 8
- Sorex monticolus parvidens. See Shrew, San Bernadino dusky
- Sorex ornatus sinuosus. See Shrew, Suisun
- Sorex ornatus willetti. See Shrew, Santa Catalina
- Sparrow, Santa Barbara song, proposed delisting, extinct, Sep, 8
- Special Foreign Currency Program on international conservation, May, 9-11
- Species, 5-year review of 1977 listings, Oct, 3
- Speoplatyrhinus poulsoni. See Cavefish, Alabama
- Speyeria zerene hippolyta. See Butterfly, Oregon silverspot
- Sphaerodactylus micropithecus. See Gecko, Monito
- Spinedace, Little Colorado River, data for possible listing, Jan, 2
- Spiranthes parksii, E listing, background on, photo, May, 1, 4
- Squawfish, Colorado River: complex court battles over stocking programs, Feb, 7; Monitoring Program, Jun, 5; spawning migration of radio-equipped, Jul, 4; field investigation results, Sep, 11; microtagged, releases, Nov, 6
- State nongame programs: TN, photos, Feb, 4-6; income tax check-offs for, photo, chart of participants and dollar amounts, Nov, 4-5
- Stephanomeria malheurensis, E listing, critical habitat, regulatory background, Dec, 1, 7
- Sterna albifrons athalassos. See Tern, least
- Sterna albifrons browni. See Tern, California least
- Stizostedion vitreum glaucum. See Pike, blue
- Stork, wood, status review, population decline, Mar, 4
- Stygobromus hayi. See Amphipod, Hay's spring
- Succinea chittenangoensis. See Snail, Chittenango ovate amber
- Sucker, razorback, Dexter hatchery stockings: Feb, 2; Mar, 2; Apr, 2; May, 2; Oct, 2; Nov, 6
- Taking of wildlife, Amendments on, Nov, 7-8
- Telemetry, for Kirtland's warbler, Apr, 3
- Tennessee, Wildlife Resource Agency's ES Program, citizen cooperation on eaglet hacking, topminnow conservation, photos, Feb, 4-6
- Tern, California least: poor nesting season, Aug, 3; coordination defuses threat to nesting areas, photos, Dec, 4-5
- Tern, least, report and meeting recommendations on, Apr, 3
- Thermosphaeroma thermophilum. See Isopod, Socorro
- Topminnow, barren's, conservation agreement on TN manmade pond, photos, Feb, 5-6
- Topminnow, Gila: elimination of competing fish, Apr, 2-3; massive reintroduction effort, Jul, 2
- Treefrog, Pine Barrens, proposed delisting of FL population, Oct, 3
- Trees, first recovery plan for, Feb, 7
- Trichechus manatus. See Manatee, West Indian

Trout, brook, catch-and-release program,
Dec, 6
Trout, Gila, reintroduction in AZ, Aug, 3
Trout, greenback cutthroat: broodstock
management, Dec, 6; catch-and-release
program, Dec, 6
Turtle, green sea, mariculture exemption
again sought, May, 4
Turtle, hawksbill sea: nesting in FL, Feb,
7; Puerto Rico nesting beaches determined
Critical Habitat, Jul, 3
Turtle, Kemp's Ridley sea, eggs from Mexico
to Padre Island, Jul, 2
Turtle, Olive Ridley, research on Costa
Rican nesting on beaches (arribadas),
tagging, hatching, population estimates,
photos, Jul, 5-7
Turtles, sea, identification poster, photo,
Apr, 4

Uma inornata. See Lizard, Coachella Valley
fringe-toed

Ursus arctos. See Bear, Alaskan brown

Ursus arctos horribilis. See Bear, grizzly

Virginia, co-op research on E mussels,
photos, Mar, 6-7

Warbler, Kirtland's: telemetry transmitter
for, Apr, 3; results of annual census,
Aug, 3

Western Hemisphere Convention, Jan, 4-5, 7

Whale, humpback, NOAA studies possible
sanctuary, May, 8

White River Fishes Study, May, 3-4

Wildlife products: sale of forfeited,
Sep, 9; reference series on permit
procedures, Dec, 7

Wildlife professionals, for Latin America,
Jan, 5

Wire-lettuce, Malheur. See Stephanomeria
malheurensis

Wolf, Alaskan gray, proposed export
findings, Sep, 10

Wolf, gray: proposed return of management
to MN, Jul, 4; Technical Workshop on,
Oct, 8; proposed CITES change, Dec, 6

Wolf, Mexican, captive female produces
litter, Jun, 2

Wolf, red: captive breeding success, Jun,
2; recovery plan approved, hybridization
with coyote, captive breeding, Aug, 6-7

Woodpecker, red-cockaded, symposium on,
Jun, 2, 5, Oct, 7

Xyranchea texanus. See Sucker, razorback

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Woodland Caribou Listed as Endangered in Emergency Rule

The only population of caribou that still regularly occurs in the conterminous United States has been declared Endangered in an emergency rule (F.R. 1/14/83). Sometimes known as the southern Selkirk Mountain herd, this very small population of woodland caribou (*Rangifer tarandus caribou*) found in northeastern Washington, northern Idaho, and southern British Columbia (Canada), has fallen to a level that probably cannot sustain the herd much longer. Illegal hunting, habitat loss, collisions with motor vehicles, and inbreeding problems are the primary threats to the herd. The emergency listing will remain in effect for 240 days (until 9/12/83), during which time the Service intends to proceed with a proposal for a permanent rule.

Background

Both the caribou of North America and the reindeer of Eurasia belong to a single species, *Rangifer tarandus*. One subspecies, the woodland caribou (*R. t. caribou*) once occupied nearly the entire forested region from southeastern Alaska and British Columbia to Newfoundland and Nova Scotia. In the conterminous U.S., populations occurred in Maine, New Hampshire, Vermont, New York, Michigan, Wisconsin, Minnesota, Montana, Idaho, and Washington. Largely because of killing and habitat alteration, indigenous caribou disappeared from New England by about 1908 and from the Great Lakes States by 1940. A few individuals wandering across the border from Canada into Minnesota and Montana have been reported in recent years, but they are not members of the herd covered by this rule.

The only caribou population that still regularly occurs in the conterminous U.S. is the southern Selkirk Mountain herd. Early records indicate that, in the 19th century, caribou were plentiful in the mountains of northeastern Washington, northern Idaho, and southern British Columbia. By 1900, however, unrestricted hunting led to a major reduction in numbers. Logging of old-

growth trees that bear lichens, the major part of the caribou's winter diet, contributed in the decline. Among the other factors, especially as the population drop accelerated in recent decades, have been low rates of calf survival and a lack of immigration from other herds. The absence of natural augmentation to the isolated population from outside sources causes the herd to rely on inbreeding for recruitment and reduces the genetic variability of the offspring, further weakening the viability of the herd. With a current population of only 13-20 individuals, the woodland caribou is one of the most critically vulnerable mammals in the U.S..

At such low levels, the herd is increasingly jeopardized by illegal hunting. Poachers killed at least one animal in each of the years 1980, 1981, and 1982, in addition to those taken unlawfully in previous years. Caribou are relatively easy for hunters to approach and shoot. There is also the possibility that a licensed deer or elk hunter could shoot a caribou by accident. The threat to the herd is greatest where the caribou frequent areas with good road access for

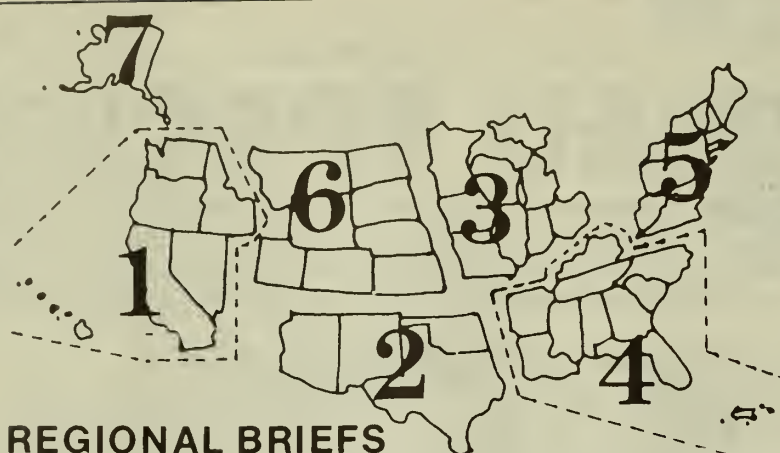
hunters. (Fortunately, the herd has spent more time during the past decade in the Canadian portion of its range where there are fewer roads.) Previous restrictions have not been effective in stopping the poaching. The situation has now reached such a critical state that the premature death of even one more animal could mean the difference between survival and extinction for the herd.

In addition to the problem of increasing access to the habitat, road construction is adding to the potential for caribou-vehicle collisions on U.S. Forest Service (USFS) roads used by loggers, miners, and recreationists. Accidents involving deer are known to occur. Much of the caribou habitat in Washington and Idaho is on land managed by the USFS. Although that agency considers the woodland caribou to be a "sensitive species," it has allowed a considerable amount of timber harvesting and road building in old-growth forests within the southern Selkirk population's range. Some of this activity has been having adverse effects on the herd.

Continued on page 4



A bull caribou feeding in the forests of the Selkirk Mountains, northern Idaho.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of December:

Region 1—A meeting of the Mohave Tui Chub Advisory Group was held on November 9, 1982, in Barstow, California, to discuss the recovery effort for this Endangered fish. Representatives from the U.S. Fish and Wildlife Service,

Bureau of Land Management, California Department of Fish and Game, Desert Studies Consortium, several California universities, and Barstow School District were in attendance. The Mohave tui chub (*Gila bicolor mohavensis*) was formerly found throughout the Mohave River but now exists only in three refugia. A die-off recently occurred in one

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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refugia, and a second population is not considered secure because of its small size. The Mohave River no longer provides suitable habitat because of hybridization with the exotic arroyo chub (*Gila orcutti*), which has become established throughout the river. The primary topic of discussion at the meeting was potential transplant sites for the Mohave tui chub. Camp Cady Wildlife Area, Afton Canyon, and the Mohave Narrows Regional Park were identified as the primary potential sites. These areas are located along the Mohave River, but are separated from the main flow that contains the exotic arroyo chub.

On November 26, 1982, staff personnel from the Sacramento Endangered Species Office and the U.S. Forest Service-Truckee District conducted a site visit to the only known population of the Endangered Truckee mahonia, or barberry (*Berberis sonnei*). The purpose of the visit was to stake and tag various individual stems of the plant prior to anticipated heavy winter snows so that cuttings could be taken later this winter while the plant is dormant. Cuttings will be used for various studies and to propagate additional plants to assist in the recovery of the species.

The Truckee mahonia is a low-growing evergreen shrub with pinnately compound leaves of five narrowly oblong leaflets. Its sulphur-yellow flowers occur in dense clusters called racemes, and have a fragrance reminiscent of carnations. Clusters of bluish-purple, pea-sized fruits are usually visible by mid-summer. Stems of the Truckee mahonia emerge from the rocks and cobbles along approximately 35 m of the Truckee River in three places. All of the plants occur on private land in an area of perhaps 100 m².

During early August 1982, a maintenance worker for the James Campbell National Wildlife Refuge at Kahuku, Island of O'ahu, Hawai'i, noticed some turtle tracks and diggings on the beach adjacent to the refuge. This important sighting was reported to George Balazs, of the National Marine Fisheries Service, and a biweekly monitoring schedule was set up. Hatchlings emerged on September 24. On September 28, Balazs visited the site and dug up an old nest, recovering several green turtle (*Chelonia mydas*) egg shells. This is the first recorded case of a green turtle nesting on O'ahu.

Region 2—Little Creek, in the Gila National Forest (Arizona), was stocked with over 100 Endangered Gila trout (*Salmo gilae*) on December 5, 1982. The fish were brought in by helicopter from South Diamond Creek and dispersed along Little Creek by personnel from several State and Federal agencies. This release culminates more than 7 years of planning and coordination among these

Continued on page 5

Condor Update—Research and Captive Propagation Effort Widened

The cooperative effort between the Service and the National Audubon Society to prevent the extinction of the California condor (*Gymnogyps californianus*) has been widened by recent decisions of the California Game and Fish Commission that allow for an intensified research and captive propagation program. Recent surveys that use photographic identification of individual birds indicate that only about 20 birds remain, a number significantly lower than the estimate of 30 in recent years through older census techniques.

On January 7, 1983, the Commission made the following rulings: 1) Permission was given to radio-tag an additional two condors of any age, although adults can be captured only until January 31, 1983, the start of the breeding season. 2) First eggs can be taken from any nest for artificial incubation and eventual captive breeding since it has been proven that California condors can lay a second egg if the first is lost. 3) An underweight, immature male condor that was taken to

the Los Angeles Zoo on December 5, 1982, to gain weight will be retained in captivity for breeding purposes. 4) Alternate capture techniques may be used to trap an unpaired adult condor that is believed to be a female. The bird will be used in the captive breeding program. Cannon-netting, the method used thus far in the California condor program, is not appropriate in the location this individual inhabits, and alternatives that have proven effective to capture Andean condors (*Vultur gryphus*) may be used.

The permit issued to the Service in 1982 allowed up to two birds to be radio-tagged. The first condor was captured in October, and the second was trapped November 13 with its mate. The two birds approached the bait so closely that one could not be captured without taking the other. No problems were encountered in trapping or handling the birds. The bird that blood sample analysis later identified as male was fitted with identification tags and two small, solar-

powered transmitters. One of the radios contains a 7-year pacemaker battery that switches on automatically at night or whenever sunlight cannot reach the transmitter's solar cell, insuring a continuous signal for the trackers. This radio allows the researchers to chart the bird's movements, and to locate the condor if it dies in such a way that solar radiation cannot reach the transmitters. Since the condor mortality rate appears to be even greater than originally thought, perhaps as many as four or five being lost each year, radio tracking could help the research team determine the causes and work toward a reversal of the downward trend.

The research team has resumed its efforts to trap a female condor for captive propagation with Topa-Topa, the male at the Los Angeles Zoo. Meanwhile, the male condor chick removed from the wild in August 1982 after parental neglect continues to do well at San Diego Wild Animal Park.

Additional Proposal Decisions Announced

CITES NEWS— December 1982

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

A notice was recently published announcing the Service's decisions regarding 11 animals and 24 plants that were identified in previous notices (F.R. 2/16/82 and F.R. 9/7/82) as candidates for United States proposals to amend the CITES appendices (F.R. 12/27/82). Proposed amendments announced in this notice, along with those announced in an earlier notice (F.R. 11/17/82), will be submitted for the consideration of the CITES nations at the next regular meeting in April 1983.

Comments and information received in response to earlier notices, as well as the views of authorities in the various countries where these species occur, were considered by the Service in determining what decision should be made regarding each proposal. A summary of these decisions follows:

- Indian pangolin (*Manis crassicaudata*), Malayan pangolin (*Manis javanica*), and Chinese pangolin (*Manis pentadactyla*)—Information on population status is needed on all species to determine if they are threatened with extinction. The Service will not propose to transfer these species from Appendix II to I.

- White-lipped peccary (*Tayassu pecari*) and Collared peccary or javelina (*Tayassu tajacu*)—Information on population status is not adequate to justify

adding these species to Appendix II at this time.

- African wild ass (*Equus asinus*)—The species is much reduced in distribution and subject to hunting although it is afforded legal protection in the countries of origin. There is documented potential for international trade in live specimens. The Service has decided to propose this species for addition to Appendix I, excluding domesticated stock from the listing.

- Caninde macaw (*Ara caninde*) and Red-fronted macaw (*Ara rubrogenys*)—Based on evidence of low numbers, restricted distribution, and growing international trade, the Service has decided to propose transferring these species from Appendix II to I.

- Wattled crane (*Bugeranus carunculatus*)—The species is not yet threatened with extinction, although it may become so in the future unless measures are taken to protect its habitat. International trade does not appear to be a significant factor in the species' decline. The Service has decided not to propose this species in Appendix I.

- Yacare (*Caiman crocodilus yacare*)—Even though there is extensive international trade in skins and manufactured products of *C. crocodilus*, some of which involves this subspecies,

Continued on page 8

Protection Extended for Two Ash Meadows Species

Two desert fishes that are endemic to Ash Meadows, Nevada, and threatened by a large residential/agricultural development have again been temporarily listed as Endangered in a second emergency rule (F.R. 1/5/83). A determination of Critical Habitat was included in the rule. Both species, the Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*) and the Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*), were listed temporarily in an earlier emergency rule May 10, 1982, which expired January 5, 1982 (see story in the June 1982 BULLETIN). Simultaneous with the publication of the second emergency rule, the Service proposed listing the two fishes on a permanent basis and making a final determination of their Critical Habitat.

Ash Meadows is a unique and diverse desert wetland ecosystem made up of a number of springs and seeps in a valley

about 110 kilometers northwest of Las Vegas. It has the distinction of containing the highest concentration of endemic animal species in the continental United States as well as a number of endemic plants. The fragile springs upon which most of these species depend are fed by an aquifer consisting of "fossil water" deposited more than 10,000 years ago. Unfortunately, a large development planned for the area threatens the endemic species with extinction through excessive use of surface waters and "mining" of the slow-recharge aquifer, both of which would destroy the springs and downgradient wetland habitat. Several of the springs were already damaged prior to the first emergency rule.

Although the Bureau of Land Management (BLM) is the principal landowner in Ash Meadows, Preferred Equities Corporation (PEC), a developer, owns

most of the surface water rights. Completion of a proposal for a final listing was delayed pending negotiations between PEC and BLM for a land exchange, which would insure conservation of the springs while providing PEC with an alternate site for its development. Extended protection for the fishes became necessary after proposed additional negotiations were unsuccessful. Nevertheless, under Sections 7 and 9 of the Endangered Species Act, modification of PEC's proposed construction activities to avoid taking of the listed fishes or damage to their Critical Habitat is likely to be necessary.

The second emergency rule took effect immediately on January 5. A public hearing on the proposed final rule will be conducted at 7:00 p.m., on February 11, 1983, at the BLM's Las Vegas District Office, 4765 West Vegas Drive, Las Vegas, Nevada. Comments on the proposed rule are requested from all interested persons, organizations, and agencies, and should be received by the Regional Director, U.S. Fish and Wildlife Service, Suite 1692, Lloyd 500 Building, 500 N.E. Multnomah Street, Portland, Oregon 97232, by February 22, 1983.

Woodland Caribou

Continued from page 1

The Fish and Wildlife Service has known for some time that the herd is in trouble, but only within recent months has the full severity of its condition become apparent. On February 9, 1981, the Service published a *Federal Register* notice accepting two petitions to list the population in accordance with the Endangered Species Act. At that time, the caribou were estimated to number

20-30, about the same as during the previous decade. Since publication of the notice, evidence has accumulated that the status of the herd has deteriorated badly; the latest survey gave an actual count of only 13 individuals at all ages. Such a low population level is far below the minimum necessary to insure survival.

Effects of the Rule

Throughout the 240-day life of the

emergency rule, the southern Selkirk Mountain herd of the woodland caribou will be classified as Endangered and will receive protection under the Endangered Species Act. All provisions of 50 CFR 17.21 and 17.23 now apply, including the prohibitions on taking the species and on interstate or international trafficking. Under Section 7 of the Act, Federal agencies must insure that any activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the population. Although most of the herd's U.S. range is on USFS land, effects on that agency are not expected to be major since it has been attempting to manage its lands with consideration of the caribou's welfare in accordance with USFS policy on "sensitive" species. The rule also will apply to the activities of other Federal agencies in the area.

Better control over poaching of woodland caribou is possible since Federal agents can now be assigned to assist in enforcement of the taking prohibition. Other benefits of the listing include the authority to develop and implement a recovery plan for the herd, along with the opportunity for enhanced cooperation with the Canadian government on conservation planning.

While the southern Selkirk Mountain herd is temporarily protected, the Service is proceeding with work on a proposal to make the Endangered classification permanent.



Areas such as these glaciated basins in the Selkirk Mountains are among the last remnants of good caribou habitat for the listed herd.

Notice Lists Candidate Vertebrate Species

The Service identified in a recent notice of review 363 United States vertebrates that are being considered for addition to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 12/30/82). The largest number of the candidate species are fish (136), followed by birds (71), mammals (64), reptiles (47), and amphibians (45).

The animals included in the new notice are grouped in several categories in order to accurately reflect the Service's present evaluation of their conservation status. Category 1 includes 62 animals for which the Service already has substantial information to support the biological appropriateness of proposing to

list the species as Endangered or Threatened, and for which the preparation and publication of such proposals are anticipated. Category 2 includes 301 species for which further information is needed to determine whether they qualify for listing. Category 3 comprises 38 species that are no longer being considered for listing as Endangered or Threatened. Among the vertebrates in Category 3 are 14 species that are presumed to be extinct; 6 that are not regarded as taxonomically valid species or subspecies; and 18 that are more widespread than formerly believed or that are not presently subject to any identifiable threat.

The notice requests information con-

cerning the status, taxonomy, and distribution of the identified species; recommendations concerning possible designation of Critical Habitat; documentation of threats to any of the species; and nominations of taxa not included in the list. The list of candidate species will be amended periodically to reflect new information or change in the status of the species. A copy of the notice may be obtained from the December 30, 1982, *Federal Register* document or by writing the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. Comments or information on the species included in the notice may be sent to the above address.

The Service anticipates publication of a similar notice on invertebrate species in the near future. Such a notice on U.S. plants was already published in the *Federal Register* on December 15, 1980.

Regional Briefs

Continued from page 2

agencies, and is part of the Gila Trout Recovery Plan.

A population genetics study on the bald eagle (*Haliaeetus leucocephalus*) has been initiated to determine the geographic isolation among the bald eagle populations of North America. The results may be particularly relevant to bald eagle translocation and hacking programs. Region 2 biologists are especially interested in determining if, and for how long, the Arizona breeding population has been genetically isolated from other populations.

A joint meeting of the Arizona, New Mexico, and Texas Endangered plant recovery teams will be held in Albuquerque on January 27-28 to discuss technical review drafts of recovery plans for a number of Southwestern cacti. The region's overall listing and recovery effort will also be reviewed.

Region 4—Biologists from the Asheville Endangered Species Field Office met with personnel from the Mattamuskeet National Wildlife Refuge, North Carolina Wildlife Resources Commission, Tennessee Valley Authority, North Carolina Wildlife Federation, and North Carolina State University on November 16, 1982, to discuss plans for a proposed bald eagle hacking project at the Refuge. The Service's Patuxent Wildlife Research Center, Laurel, Maryland, plans to supply the eaglets for the spring 1983 release. This will be the first attempt to hack bald eagles in North Carolina.

Region 6—Status reports have been received for three Utah fish. One fish, the Webbug sucker (*Catostomus fecundus*), has been determined to be a hybrid

between the Utah sucker (*C. ardens*) and the June sucker (*Chasmistes liorus*). The June sucker is endemic to Utah Lake in Utah County. Its population has declined drastically. This decline is attributed to exploitation by commercial fishermen, loss of spawning habitat, water manipulation, agricultural practices, and the introduction of non-native fish. The third fish, the least chub (*Lotichthys phlegethontis*), was common at one time throughout the Great Basin drainage and occupied a variety of habitats. Today, the species is only known to occur in a few spring-marsh complexes of the Snake Valley in west central Utah. The main threats to the species are loss of habitat, hybridization, and competition.

The February 1982 BULLETIN reported that in the lawsuit brought by the Colorado River Water Conservation District and other plaintiffs against the Department of Interior and the State of Colorado, the court found that the Colorado squawfish (*Ptychocheilus lucius*) and humpback chub (*Gila cypha*) were properly listed as Endangered. On October 28, 1982, the plaintiffs appealed this ruling, and asked that the judgment be reversed to reflect findings in a Memorandum Opinion and Order issued August 3, 1981, which was in favor of the plaintiffs (see October 1981 BULLETIN). In December 1982, Federal and State defendants filed briefs regarding the appeal. No ruling has been made.

The Wyoming Game and Fish Department has hired Dave Belitsky as their Black-footed Ferret Coordinator. Dave will be stationed in Cody, which is about 30 miles north of the Meeteetse ferret (*Mustela nigripes*) population.

Region 7—Skip Ambrose, a Region 7 biologist, presented a paper entitled, "Band Recoveries of Alaska Peregrine Falcons" at the annual meeting of the Raptor Research Foundation, November 18-20, in Salt Lake City, Utah.

On December 3rd, at the Pacific Seabird Group meeting in Honolulu, Hawaii, another Region 7 biologist, Michael Amaral, delivered a slide presentation entitled, "The Endangered Aleutian Canada Goose—On the Threshold of Recovery."

As a result of a reorganization of refuge administration in Alaska, John Martin has resigned from the Aleutian Canada Goose Recovery Team and the Regional Director, Keith Schreiner, has appointed C. Fred Ziellmaker (Refuge Manager of the Aleutian Islands National Wildlife Refuge) the new team leader. During the meeting, Dr. Paul Springer reported that over 3,000 Aleutian Canada Geese (*Branta canadensis leucopareia*) have been observed in the wintering grounds thus far. This exceeds the record high count of 2,700 from 1981-1982. Included among these are 88 of the 135 geese transplanted to Agattu from the wild population of Buldir Island as part of this summer's effort to reestablish a breeding colony there. Important recommendations made by the team include: (1) increasing to 200 the number of wild geese and goslings transplanted annually from Buldir to selected release islands; (2) eliminating the introduced arctic fox (*Alopex lagopus*) populations on Amukta and Kiska Islands; and (3) appointing a representative from the Oregon Department of Fish and Wildlife to serve on the recovery team.

Forest Birds of Guam in Critical Danger

by John Engbring
Honolulu Environmental Services Office

Ten to twenty years ago, a dramatic and unexplained decline of native forest birds was noticed on the U.S. Territory of Guam and there is a growing concern that several species may soon be extinct. The decline has been so extensive that vast areas of forest are now devoid of all bird life. Ten birds have been identified as candidates for listing as Threatened or Endangered (F.R. 5/18/79), and two others are potential candidates for listing. These dozen species comprise all of Guam's native forest birds. No other Micronesian island has as many native forest species faced with such an imminent threat of extinction.

Guam is a warm, humid island in the far Western Pacific, 6,000 miles from the West Coast of the United States. It is a part of Micronesia, a region that includes the Marshall, Caroline, and Mariana Island groups. Discovered by Magellan in 1521, Guam was a Spanish colony for nearly 300 years until it was ceded to the U.S. in 1898 after the Spanish-American war. Since that time, it has been a territory of the U.S., and has remained important as a strategic military outpost.

In June 1981, the U.S. Fish and Wildlife Service and the Guam Aquatic and Wildlife Resources Division (GAWRD) conducted a joint study to assess the status of the remaining forest birds on Guam. The Guam study was the first phase of a Pacific Islands survey program being conducted by the Service's Honolulu Environmental Services Office. Birds of the U.S. Pacific Island Territories, including Guam, American Samoa, and the Pacific Island Trust Territory, are among the most isolated and poorly known of any U.S. avifauna. In

many cases, the most recent species accounts are derived from military personnel stationed there during World War II.

The downward trend in bird numbers was first recorded by the GAWRD, which has been conducting roadside counts and life history studies for several years.

The June 1981 survey was the first major effort to determine density, distribution, and population size for each species of native forest bird. The survey approach used was the variable circular plot method, as refined by Service bird surveys in Hawai'i. Under this method, researchers mark stations within the survey area and make 8-minute counts at each station. During each count, all birds heard or seen, and their distance from the observer, are recorded. The survey confirmed reports of a much restricted range for all native forest species, which are now found almost exclusively in the extreme northern tip of Guam.

Taxa in Jeopardy

Most forest birds of Guam are generalists and exhibit few of the evolutionary adaptations found in other insular ecosystems such as Hawai'i or the Galapagos. The resident avifauna derived mainly from the Old World, primarily the New Guinea and Philippine regions. About 90 species of birds have been recorded from Guam, but most are migrant or vagrant. The resident avifauna is comprised of 24 species, 17 native and 7 introduced. Five species of indigenous Guam birds, the Micronesian megapode (*Megapodius laperouse*), Mariana mallard (*Anas oustaleti*), white-browed rail (*Poliolimnas cinereus*), wedge-tailed shearwater (*Puffinus pacificus*), and nightingale reed-warbler (*Acrocephalus luscini*a), have been extirpated on the island since the arrival of westerners. These disappearances appear to be unrelated to the current decline, with the possible exception of the nightingale reed-warbler, which vanished in the 1960's. Results of the survey are given below:

Guam rail (*Rallus owstoni*). The Guam rail is unique in that it is the only surviving endemic rail in Micronesia. It is a flightless, ground-dwelling species, and until very recently was commonly seen along roads or in residential areas. The rail was so abundant that it was even hunted as a game species until the mid-1970's. It was once distributed island-wide, and could be found in a variety of habitats from deep forest to open fields. The populations declined severely in the 1970's, and the rail can now be found

only in northern Guam and in very low densities. Because of the low number recorded during the survey, no population estimate was made. The rail continues to decline and, unless the trend is reversed, it may soon follow a number of other Pacific Island rails that have already become extinct.

Common gallinule (*Gallinula chloropus guami*). The gallinule is distributed worldwide, but this subspecies is restricted to the Mariana Islands. It is suffering primarily from the loss of wetland habitat by development and draining of low-lying areas. This is the only Guam candidate for endangered species listing that is not a forest bird, and therefore it was not sampled during the survey.

White-throated ground-dove (*Gallinula columba x. xanthonura*). Contrary to what the name implies, the ground-dove is an arboreal species and rarely seen on the ground. It is secretive when in the foliage, but can be seen occasionally as it flies above the forest canopy. Only the male has a white throat; the female is an overall brown. The subspecies is found only in the Mariana Islands and on Yap, but the species is more widespread in Micronesia. About 500 birds are estimated to remain on Guam.

Mariana fruit-dove (*Ptilinopus roseicapilla*). This is a beautiful green, yellow, orange, and purple dove whose distinctive calls once were frequently heard on Guam. Its numbers are much reduced now, and fewer than 300 are thought to remain. The fruit-dove forages in the upper canopy and, despite its bright colors, is difficult to observe. The species is endemic to the Mariana Islands, but several other members of the genus are found in Micronesia.

Vanikoro swiftlet (*Aerodramus vanikorensis bartshi*). This cave-dwelling swiftlet has undergone one of the most severe of all declines, and caves that once harbored thousands of birds are



Male white-throated ground dove



Guam rail



Cardinal honeyeater



Mariana fruit-dove

now vacant. Only the guano accumulated on the cave floor, and the old nests still clinging to the ceiling, attest to the great numbers that were once present. Only 18 birds were seen during the month-long survey, and fewer than 100 are thought to remain on Guam. Unlike all other native forest birds, which are found in northern Guam, the locus of the remnant swiftlet population is in southern Guam. The species is widespread in the Australasian region, but the subspecies is endemic to the Mariana Islands.

Micronesian kingfisher (*Halcyon c. cinnamomina*). Unlike many members of the kingfisher family, the Micronesian kingfisher is not typically associated with water habitats. Instead, it is a forest resident that forages on insects, lizards, and other small animals. This kingfisher has fared slightly better than most other Guam birds, and as many as 3,000 are thought to remain; however, it is restricted to one-fourth of its original distribution. The species is found also on Palau and Ponape, but the distinctive Guam subspecies is endemic.

Guam broadbill (*Myiagra freycineti*). The broadbill is an endemic, territorial flycatcher that once was commonly seen in the forest understory. It is a beautiful slate-blue above, and a creamy cinnamon-white below. Only a few hundred remain, and it is among the most imperiled of all forest birds.

Rufous-fronted fantail (*Rhipidura rufifrons uraniae*). The fantail is an active and conspicuous flycatcher found in the forest understory. It frequently will perch within a few meters of an observer, spreading its tail and scolding excitedly. About 1,000 individuals survive on Guam. The species is widespread in the Pacific, but the subspecies is endemic to Guam.

Bridled white-eye (*Zosterops c. con-spicillata*). This small, yellowish bird is now difficult to locate and observe on Guam. Typically, it moves in small flocks that forage actively in the upper forest canopy, feeding on insects, seeds and fruits. It is now among the most re-

stricted of all Guam birds, and occupies less than 5 percent of its original range. About 2,000 birds are estimated to remain. The species is found in the Caroline and Mariana Islands, but the subspecies is endemic to Guam.

Cardinal honeyeater (*Myzomela cardinalis saffordi*). This brilliant red and black honeyeater is the only truly nectarivorous species on Guam, although it also takes insects as part of its diet. It once was conspicuous around yards and gardens, where ornamental plants provided a good source of nectar. Like other forest birds, it is now restricted to northern Guam, where an estimated 2,500 birds survive. The species is widespread in the Pacific, but the subspecies is restricted to the Mariana Islands.

Micronesian starling (*Aplonis opaca guami*). The Micronesian starling is a conspicuous, glossy black bird that forms small, noisy flocks. It is omnivorous, and feeds mostly in the upper canopy. Since it still occupies about one-fourth of its original range, it is doing better than most Guam forest birds. The population is estimated to be 15,000. It is a widespread species in Micronesia, but the subspecies is restricted to the Mariana Islands.

Mariana crow (*Corvus kubaryi*). This crow is endemic to Guam and a small island just to the north, Rota. It is the only representative of the Corvid family in Micronesia and, in habits, size, and coloration, it is similar to the common crow (*Corvus brachyrhynchos*) of North America. A noticeable difference is its tameness; it commonly will approach to within a few meters of a human intruder. This is possibly a trait resulting from long isolation from large predators. The population on Guam is estimated to be less than 400.

Causes for the Decline

No single factor has yet been implicated in the recent decline of Guam

birds, but a number of explanations have been suggested:

Disease: A likely cause for the decline of Guam birds has been the introduction of diseases. There are distinct similarities between the pattern of disappearance of birds on Guam and the pattern on Hawai'i, where it is thought that disease played a major role. Introduced birds could be serving as disease reservoirs, harboring such pathogens as avian malaria or avian pox to which the native species may have little or no resistance. Mosquitos have been introduced since the arrival of man, and also may be acting as the disease vectors. Under Pittman-Robertson and Endangered Species grants-in-aid, the GAWRD is initiating studies to determine the presence and extent of avian disease.

Introduced Predators: A number of potential predators have been introduced to Guam, and they may be affecting bird populations. Among these exotic species are rats, feral cats, pigs, dogs, a monitor lizard, and a snake. The brown tree snake (*Boiga irregularis*) is the least understood of these predators, but may be the most destructive. It was

Continued on page 8



Mariana crow

Birds of Guam

Continued from page 7

introduced about 1947, and has since spread throughout the island. It is known to feed on birds and bird eggs, and forages both on the ground and in trees.

Pesticides: Several pesticides, including DDT and other chlorinated hydrocarbons, have been utilized on Guam since the end of World War II, and there has been much speculation about their possible impact on forest birds, particularly insectivorous species. A study to determine the residual level of pesticides on Guam was initiated in 1981 by the Service (through the Patuxent Wildlife Research Center) and the GAWRD, funded in part by Section 6 Endangered Species grant-in-aid money. Preliminary results indicate that pesticides are not currently a problem on Guam, although they might have been in the past.

Habitat Loss: Human activities have destroyed a large portion of the native forest on Guam, and the reduction in forest bird numbers can be attributed in part to this loss. Southern Guam, in particular, has lost much of its forest. It is now covered largely by eroded, grassy savannas, the result of repeated burning through centuries of human occupation. The recent decline in bird numbers, however, appears to be unrelated to



Micronesian kingfisher

habitat destruction. There remains much good forest throughout Guam that is completely devoid of bird life. On nearby islands with apparently identical habitat conditions, many of these birds, or close relatives, are quite common.

The status of forest birds on Guam is critical, and several species are in imminent danger of extinction. Counts by the GAWRD since the 1981 survey indicate that bird numbers are continuing to

drop. Studies to confirm the causes of the decline are now being initiated by the GAWRD. Until the findings become available, efforts should be made to maintain the integrity of forests in the portion of northern Guam that still harbors native forest birds. Although it possibly is already too late to save some Guam species, understanding the causes for the decline might help avert similar losses on other Pacific islands.

CITES NEWS

Continued from page 3

there does not appear to be enough information on the population status of the yacare to support moving it from Appendix II to Appendix I. The Service has decided not to submit this proposal, pending the results of further research.

- **Black softshell turtle (*Trionyx ater*)**—The proposal to remove this species from Appendix I is based on a report that this species is becoming genetically swamped by *T. spiniferus*. Since the Service has obtained no data to determine whether genetic swamping has actually occurred, it has decided that it would be premature to propose delisting *T. ater* at this time.

- The Service has received population and trade data that it considers to be sufficient to clearly warrant addition of the following plant species to the CITES appendices:

Add to Appendix I:

Agavaceae (Agave family)

Agave arizonica (New River agave)—AZ

A. parviflora (Santa Cruz striped agave)—AZ, Mex.

Nolina interrata (Dehesa bear-grass)—CA, Mex.

Berberidaceae (Barberry family)

Mahonia nevinii (Nevin's barberry)—CA

M. sonnei (Truckee barberry)—CA

Crassulaceae (Orpine family)

Dudleya stolonifera (Laguna Beach dudleya)—CA

D. traskiae (Santa Barbara Island dudleya)—CA

Ericaceae (Heath family)

Rhododendron chapmanii (Chapman's rhododendron)—FLA

R. prunifolium (Plumleaf azalea)—AL, GA

Fouquieriaceae (Candlewood family)
Fouquieria fasciculata (Abrol de Barril)—Mex.

F. purpusii—Mex.

Liliaceae (Lily family)

Lilium grayi (Gray's lilly)—NC, TN, VA

L. iridollae (Pot-of-gold lily)—AL, FL
L. occidentale (Western lily)—CA, OR

L. pitkinense (Pitkin Marsh lily)—CA

Add to Appendix II:

Agavaceae (Agave family)

Agave victoriae-reginae (Queen Victoria agave)—Mex.

Diapensiaceae (Diapensia family)

Shortia galacifolia (Oconee-bells)—GA, NC, SC

Ericaceae (Heath family)

Kalmia cuneata (White wicky)—NC, SC

Fouquieriaceae (Candlewood family)

Fouquieria columnaris (Boojum tree)—MEX.

Liliaceae (Lily family)

Lilium parryi (Parry's lemon lily)—AZ, CA

Portulacaceae (Purslane family)

Lewisia cotyledon (Siskiyou lewisia)—CA, OR

L. maguirei (Maguire's lewisia)—NV

L. serrata (Saw-toothed lewisia)—CA

L. tweedyi (Tweedy's lewisia)—WA, Can.

Copies of animal and plant proposals that the Service has submitted are available upon request from the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Recovery Plan Update

Recovery plans for three mammals and one amphibian were signed during August 1982: Eastern Cougar Recovery Plan (8/2/82); Desert Slender Salamander Recovery Plan (8/12/82); Mexican Wolf Recovery Plan (8/19/82); and Morro Bay Kangaroo Rat Recovery Plan (8/18/82).

Eastern Cougar

At one time, the cougar (*Felis concolor*) occurred in all the provinces of southern Canada, throughout the United States, and in most of Central and South America. Today, sizeable populations within the U.S. are found only in the western mountains. The Endangered eastern cougar (*F. c. cougar*), one of 27 recognized cougar subspecies, originally ranged over South Carolina, Tennessee, Kentucky, Indiana, and all States to the north and east. Although many persons have considered *F. c. cougar* extinct for some time, seemingly reliable sightings have been increasingly frequent and widespread.

Fear of the large cat and its occasional depredations on livestock led early European immigrants in what is now the eastern U.S. to persecute cougars and kill them for bounty. Cougars were virtually eliminated from each region as the wilderness was settled. It is possible, however, that small numbers of cougars survived in a few remote areas because of rugged terrain, lack of access, or other factors limiting hunting success. Many of these areas have continuously supported populations of white-tailed deer (the cougar's favored prey species) and bear even after over-hunting led to these animals becoming rare over much of the East by the late 1800's. Large-scale purchases of land to form the Forest System began in 1914, and it is possible that the increasing solitude and deer populations allowed one or more small cougar populations to persist.

The continued existence of the Endangered Florida panther (*F.c. coryi*) in its coastal plain swamp habitat points out the fact that the cougar is not necessarily restricted to mountains. Many of the extensive swampy areas along the eastern coastal plain, particularly the pocosins of North Carolina, were never devoid of deer or bear and do not have vehicular access to this day. Although people seldom penetrate many of these areas, some cougar reports have been received.

In response to rising interest in cougars, the Service has sponsored a number of research and survey projects for both Endangered subspecies. Ser-

vice/State work on *F. c. cougar* has been conducted in North Carolina and Virginia, and the Service is cosponsoring a survey in New York and other northeastern States. Another project at Clemson University, South Carolina, solicits reports and other evidence (investigating as many as possible), trains observers, and conducts searches for sign near the sites of the most promising reports.

By necessity, the first step of the recovery plan is to "find and delineate cougar populations." Research to determine the frequency and variability of observing cougar sign first must be conducted in areas having confirmed populations of *F. concolor*. Techniques from these areas must then be adapted for use in searches within the historic



This salamander, from the newly discovered population, is similar in appearance to those in the type locality and may eventually be proved to be the same species.

range of *F. c. cougar*. These searches should be conducted on a systematic, priority basis, taking into account habitat characteristics and recently reported sightings, and should continue until all suitable areas have been surveyed adequately. If any cougars are found, interim protection will be provided immediately. An advisory committee of affected landowners and resource management agencies will be formed to plan the protection, habitat management, and public information programs, as well as to suggest and oversee further research. Later, when more information on cougar ecology is available, a permanent management plan will be drawn up to outline the long range steps needed to aid in the survival of the subspecies, increase its numbers, and conserve self-sustaining populations.

Details on the plan and its implementation can be obtained by contacting the Atlanta Regional Director (see page 2 for address).

Desert Slender Salamander

The desert slender salamander (*Batrachoseps aridus*) is a small amphibian whose known range consists of less than 0.2 hectare (0.5 acre) at a seep in Hidden Palms Canyon, part of a State ecological reserve in Riverside County, California. It is apparently a relict species that had wider distribution during wetter geological times.

This salamander measures less than 102mm (4 inches) in total length, and has a coloration of blackish maroon to deep chocolate, covered with tiny spots. It was discovered in 1969, and declared by California as Endangered in 1971. It was listed by the Fish and Wildlife Service as Endangered in 1973 due to the

vulnerability of its restricted habitat. Attempts to locate other populations have so far been unsuccessful; however, several individuals of the genus *Batrachoseps* were discovered in 1981 at another site in Riverside County during a Bureau of Land Management (BLM) survey. The salamanders at this new site have been tentatively identified as *B. aridus*, although the range, status, and taxonomic affinities of this population are not yet known.

Although information on the habitat requirements of the reclusive desert slender salamander is meager, one obvious need is a constantly moist environment. Extended exposure to warm, dry air would result in death by desiccation. This poses an obvious threat to the salamander because its restricted moist habitat occurs in a region whose climate is characterized by strong vernal winds, high summer temperatures, and low, erratic rainfall. Probably the most

Continued on page 10

Recovery Plan Update

Continued from page 9

important structural component of the habitat is the porous limestone sheeting that covers portions of the canyon wall in the type locality. This material has built up over time due to seepage and the precipitation of mineral solutes. The sheeting retains a moist interior environment when other nearby retreats dry out, and acts as a refuge of last resort for the salamander.

Water does not usually reach the site as streamflow, but rather as constant, steady seepage from groundwater that is in turn replenished by rainfall on the 182 hectare (440 acre) watershed. Any eventual developments on private lands within this watershed could contribute to seepage contamination or changes in water percolation rates. Too much water also can be a problem. Flooding in the canyon during severe storms in 1976 eroded almost a third of the available salamander habitat. To help stabilize the habitat, particularly the limestone sheeting, the California Department of Fish and Game (CDFG) has installed gabions (large, rock-filled wire baskets) along the base of the canyon wall near the site.

The prime objective of the recovery plan is to conserve the salamander by stabilizing, protecting, and monitoring the existing habitat and maintaining a viable, self-sustaining population. In 1973, land surrounding the desert slender salamander habitat was purchased by the State of California. Construction of the gabions and actions to control access to the site are among the accomplishments of that State agency.

It is likely, however, that additional habitat conservation measures will become necessary. An increase in human activity in the watershed, such as additional groundwater pumping or water diversion, could have serious consequences for the salamander. Among the potential remedies scheduled for consideration are further habitat acquisition, lease agreements, conservation easements, or memoranda of understanding (particularly with respect to the newly discovered site, which is on BLM-administered land).

Little information is available yet on the life history, ecology, population dynamics, or habitat requirements of the desert slender salamander, and further studies will be needed to insure effective management of the species. Close monitoring of the *B. aridus* population at Hidden Palms is recommended, along with a final taxonomic determination on the newly discovered salamanders. In the meantime, searches for other populations should continue. During a recent investigation, the BLM surveyed 30 potential salamander sites. Only two additional locations were identified as suitable habitat, but no specimens were

found. A follow-up survey of oases and springs in the Santa Rose and San Jacinto Mountains during periods of high surface moisture should be undertaken.

Details on the recovery plan and its implementation are available from the Portland Regional Director (see page 2 for address).

Mexican Wolf Plan

Fewer than 50 Mexican wolves (*Canis lupus baileyi*) remain in the wild, and

reproduction in the wild. Dilution of the remaining Mexican wolf gene pool by hybridization with the coyote or domestic dog is also at least possible as wolves become fewer and more scattered.

Therefore, the emphasis of the Service's recovery plan is the taking of wild wolves into protective custody and trying to increase their numbers in captive breeding programs. Mexico's Fauna Silvestre has agreed to the capture of as many as possible of the remaining wild wolves. Since entering into this agreement in 1980 at the meeting of the



U.S. Fish and Wildlife Service photo

Mexican Wolf in captivity at Arizona-Sonora Desert Museum.

only a handful are being held in captivity. The Service's Mexican Wolf Recovery Plan outlines a strategy for conserving and ensuring the survival of this subspecies.

C. l. baileyi has been described as the smallest in size of the 24 North American subspecies, or geographic races, of the species. The subspecies is of special scientific interest because of subtle adaptations it made to the environmental and ecological conditions at the extreme southern limits of the species range.

The Mexican wolf once ranged from southern Arizona, east to west Texas, and south to Oaxaca, Mexico. But heavy hunting and pressure to eliminate the wolf as a predator on domestic livestock essentially extirpated the animal in the United States by the 1940's, and only a remnant population remains in Mexico.

In more recent decades, wolves from the remnant Mexican population sometimes traveled the old traditional runways into the States. Until quite recently, occasional wolves continued to be reported and sometimes taken in Arizona, New Mexico, and Texas.

Mexican wolves in the wild in Mexico are extremely few, and their scarcity and separation may seriously limit further

U.S.A.-Mexico Joint Committee on Wildlife Conservation, representatives of Fauna Silvestre have also indicated interest in conducting certain captive-breeding activities with trapped Mexican wolves on Mexican lands.

Because the wolf is a sensitive, social animal, programs involving it ideally should minimize the undesirable conditioning that long-term holding and breeding in captivity may produce. The recovery plan calls for facilities to be located and designed so that management of captive wolves placed in them is as much as possible like a transplant from the wild to the wild, and so that minimal human contact is involved. The idea of a preserve and of the breeding-release enclosure in Mexico is a goal of the recovery plan. A search for possible release areas in Mexico will begin in the near future.

Since all of the Mexican wolves now in captivity were taken from Mexico, reintroduction of wolves into Mexico will have top priority. Any reintroductions of Mexican wolves in the United States will depend on the availability of animals.

An on-going Mexican wolf captive breeding program began in 1977, with the capture of several animals from the

wild in Mexico. A total of 10 animals are now involved in the program at three cooperating facilities: Arizona-Sonora Desert Museum near Tucson, Wild Canid Survival and Research Center near St. Louis, and Rio Grande Zoological Park in Albuquerque.

For more information regarding the Mexican Wolf Recovery Plan, contact the Albuquerque Regional Director (see page 2 for address).

Morro Bay Kangaroo Rat

The Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*) occurs only within a very restricted range on the south side of Morro Bay, in San Luis Obispo County, California. Over the past 20 years, both the occupied range and the total population of the animal have dropped more than 80 percent. Its current range, 640-650 acres, now hosts an estimated 320-340 individuals, a very low population level for a small mammal.

During the past 2 decades, the human population in the historical range of *D. h. morroensis* has increased by 600 percent. An accompanying building boom completely destroyed major portions of the kangaroo rat's original habitat range, and much of the remaining habitat is no longer suitable for the animal. The subspecies was listed as Endangered under the Endangered Species Act in 1970.

D. h. morroensis needs sandy soil in which to construct its relatively simple burrows. The animal also needs suitable plant cover to provide food, shelter, and a root system to support its burrows, which are usually close to the surface of the ground.

Early seral stages in the natural succession toward the climax coastal dune scrub vegetation of the region provides ideal habitat for the kangaroo rat. As the plant community ages, the taller growth crowds out the herbaceous species needed by *D. h. morroensis* for food, and impedes the animals' mobility.

Following fires and other land clearing activities that destroy the mature coastal dune scrub, herbaceous plants quickly colonize and produce an open, low-growing plant community that provides an ideal food source for the kangaroo rat. The animal quickly establishes itself in such "disturbed" areas, usually within 2-3 years. They can continue to inhabit such areas until the point at which the coastal dune scrub becomes dense and tall, a period anticipated to be 10-15 years. Kangaroo rat habitat can be best maintained by clearing approximately every 3-5 years.

The Morro Bay kangaroo rat is now known to exist at only four separate

areas in its historical range. Much of the remaining habitat area is in private ownership and much of it has not been disturbed by fire or clearing for 30 years. Off-road vehicles, domestic cats, and housing developments are prevailing negative factors in most of these areas.

The existing range of *D. h. morroensis* is so completely separated that a drop in population in one parcel cannot be restored by movement of animals from a nearby area. These small population "islands" are quite vulnerable to minor local changes in mortality rates.

Genetic drift could also be a significant factor affecting the survival of the kangaroo rat. Changes in genetic variability brought about because of limited stock of parent animals could produce a population which is no longer representative of the original stock. Implications of genetic drift research in *D. h. morroensis* are not clear, but, as a preventive measure, the Morro Bay Kangaroo Rat Recovery Plan suggests that efforts should be made to keep populations of well over 50 individuals.

The prime objective of the recovery plan is to preserve sufficient land and maintain optimum habitat conditions on it to ensure a Morro Bay kangaroo rat population of at least 2,000 animals. The reclassification of the subspecies to Threatened classification could be considered if such a level was maintained for 3 consecutive years.

The State of California (Department of Fish and Game) recently purchased 50 acres of undeveloped land in the Pecho area adjacent to Montana de Oro State Park as the proposed Morro Dunes Ecological Reserve. It was purchased partly to protect kangaroo rat habitat from development. However, few animals exist there because of the dense vegetation which is past the successional stage

best suited to them. In addition, the presence of rare plant species in this area makes it difficult to manage this land for kangaroo rat conservation.

For more information regarding the Morro Bay Kangaroo Rat Recovery Plan, contact the Portland Regional Director (see page 2 for address).

New Publications

A new book, *New England's Rare, Threatened, and Endangered Plants*, by Garrett E. Crow, is now available from the Government Printing Office (GPO). The fully illustrated, 129-page volume represents a 5-year cooperative effort involving the Service's Region 5, the New England Botanical Club's Endangered Species Committee, and the New Hampshire Agricultural Experiment Station (University of New Hampshire). Information is provided on 101 of the most rare plants in the northeast, including those that are federally listed, proposed for listing, and under review as candidates, along with others of national significance. Accounts on the most vulnerable plants include information on physical characteristics, distribution in the northeast, habitat elements, flowering period, threats, recommendations for conservation, and selected references. Twelve color plates are also included. The cost of the book is \$11.00, and it can be ordered from the Superintendent of Documents, GPO, Washington, D.C. 20402 (stock number 024-010-00605-6).

Threatened and Endangered Plants of Colorado, a booklet describing those plants occurring within the State that are listed, candidates for listing, and of na-

Continued on page 12



Photo by Aryan I. Roest

The Morro Bay kangaroo rat differs from other kangaroo rats in its smaller size and darker coloration.

New Publications

Continued from page 11

tional concern, is now available from the Region 6 Endangered Species Office (see page 2 of the BULLETIN for address). Accounts on Colorado's five listed plants include general descriptions, line drawings and photographs, habitat information, and other data. The booklet was published (August 1982) by the Service, in cooperation with the Colorado Natural Areas Program and the Colorado Natural Heritage Inventory (CNHI), and was prepared by CNHI botanist J. Scott Peterson.

Wisconsin's Endangered Flora is now available from the Department of Natural Resources. It is a 48-page booklet describing the natural history, distribution and environmental threats to Wisconsin's 87 endangered and threatened plants. It also discusses the ecology of Wisconsin's major wild habitats: dunes, wetlands, cliffs, forests and prairie. Sixty color photographs and 32 original drawings highlight the beauty and diversity of these fragile wildflowers. To order send \$2.95 in check or money order to: Wisconsin's Endangered Flora, Department of Natural Resources, Box 7921, Madison, Wisconsin 53707.

Reprints of three articles concerning wolves in Minnesota are available by writing U.S. Fish and Wildlife Service, North Central Forest Experiment Station, 1992 Folwell Avenue, St. Paul, Minnesota 55108. Please indicate which of the following reprints you wish to receive: 1) Harrington, Fred H., and L. David Mech. Fall and winter homesite use by wolves in northeastern Minnesota. Canadian Field-Naturalist, 96, 79-84; 2) Harrington, Fred H., and L. David Mech. 1982 An analysis of howling response parameters useful for wolf pack censusing. Journal of Wildlife

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	17
Birds	52	14	144	3	0	0	213	25
Reptiles	8	6	55	8	4	0	81	5
Amphibians	5	0	8	3	0	0	16	2
Fishes	28	4	11	12	0	0	55	20
Snails	3	0	1	5	0	0	9	1
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	56	2	0	8	1	2	67	6
TOTAL	199	44	444	47	7	24	765	80**

*Separate populations of a species, listed both as Endangered and Threatened are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of species currently proposed: 5 animals
6 plants

Number of Critical Habitats listed: 54

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 74

Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

January 5, 1983

Management, 46(3). 6226-693; 3) Mech, L. David, and Michael E. Nelson. Recurrence of caribou in Minnesota. American Midland Naturalist, 108(1): 206-208.

Controlled Wildlife, a three-volume reference series that will provide a simple, streamlined source of wildlife permit information for those who deal routinely with wildlife and wildlife products is in preparation by the Association of Systematics Collections.

A cumulative index of the *Endangered Species Technical Bulletin* (July 1976—December 1981) is now available. Copies may be requested by writing the Office of Endangered Species, U.S. Fish and Wildlife Service, Depart-

ment of the Interior, Washington, D.C. 20240.

The *U.S. List of Endangered and Threatened Wildlife and Plants* (50 CFR 17.11 and 17.12), reprinted January 1, 1982, is now available. Please request copies from the Office of Public Affairs—Publications, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Why Save Endangered Species? is now available from the Publications Unit, U.S. Fish and Wildlife Service, Washington, D.C. 20240. This 8-page illustrated (black and white) pamphlet is free.

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Wyoming Toad Proposed as Endangered

An extremely rare subspecies of amphibian, the Wyoming toad (*Bufo hemiophrys baxteri*), has been proposed by the Service for listing as Endangered (F.R. 1/27/83). This toad was formerly abundant throughout the Laramie Basin, but currently no populations are known to exist. Although the cause of its steep decline is not yet determined, habitat alteration and the use of various biocides may be significant factors.

The Wyoming toad was discovered by Dr. George T. Baxter in 1946. It is the only toad in the Laramie Basin, and is thought to be a relict population left behind as glaciers receded. Since its discovery, Dr. Baxter has taken University of Wyoming students during summers to observe the toad, and known breeding sites have been visited regularly for more than 30 years. Dr. Baxter's field notes indicate that the toad was common in the Laramie Basin through the early 1970's. Since 1975, however, researchers have noted a decline in the population. Toads became extremely rare between 1976 and 1978, and in 1979 none were seen although one was heard calling.

An intensive survey conducted throughout the Laramie Basin in 1980 resulted in the discovery of one small population on private land in Albany County, southeastern Wyoming. The

population occurred within a 40-acre area and was estimated to consist of no more than 25 individuals. Surveys in 1981 revealed only one male and one female at the site, and no toads were located in 1982.

Threats to the Population

Several factors are suspected in the decline of the Wyoming toad. Drainage of the plains adjacent to the Little Laramie River for irrigation and other purposes may have resulted in the drying of habitat and interfered with tadpole development. Certain uses of herbicides and insecticides could prove to be another threat. Atrazene, a herbicide, is known to decimate populations of *Bufo*, and can be introduced into watersheds in sufficient levels to kill *Bufo* eggs or tadpoles. This chemical is widely available throughout the Laramie Basin. Other herbicides, such as Tordon, are more commonly used, and their effects on amphibians are largely unknown. These chemicals are used for control of "noxious weeds" along roadside ponds and field edges typically used by the Wyoming toad. In addition, basin-wide aerial application of Baytex (Fenthion) with diesel fuel began in 1975 for mosquito control. This technique may be

highly toxic to bufonids, and there is evidence that diesel fuel alone is harmful to amphibians.

Predation is another significant threat due to the reduced population. The California gull (*Larus californicus*) population in the area has increased dramatically in recent years. Local ranchers report that their fields are literally white in spring from gulls. Other predators, including raccoons, foxes, and skunks, also have shown increases.

Effects of the Proposal

If the proposed rule is approved, the Wyoming toad would receive the protection authorized under the Endangered Species Act. All prohibitions under 50 CFR 17.21, including those on taking and interstate/international trafficking, would apply. Certain exceptions could be allowed under special permit, in accordance with 50 CFR 17.22 and 17.23, for conservation and economic hardship. The toad would also receive protection under Section 7 of the Act, which directs all Federal agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize a listed species or degrade its habitat. Since breeding sites have not been located recently, and because only a relatively small amount of the potential habitat in the Laramie Basin has been surveyed, the Service believes it would

Continued on page 4

Service Proposes Seventeen Reptiles

The Service has proposed Endangered or Threatened status under the Endangered Species Act of 1973 for 17 species of foreign reptiles (F.R. 1/20/83). If finalized, this proposed rule will provide additional protection to wild populations of these species (listed below) and allow cooperative research programs to be undertaken in their behalf.

- Serpent Island gecko—This lizard is restricted to Round Island (151 hectares) where it is rare and Serpent Island (20 hectares) where it is considered very rare; both islands are near Mauritius. Rabbits and goats were introduced onto Round Island in 1840 and these animals have destroyed the island's vegetation so that severe erosion has resulted. The

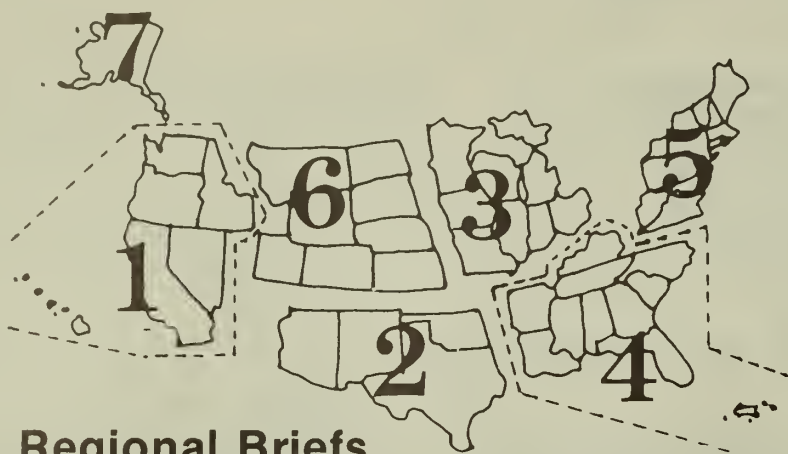
loss of this vegetation is thought to have resulted in loss of available habitat for this species. Predation is also thought to have contributed to the species' scarcity. There are estimated to be between 3,600 and 4,500 lizards remaining.

- Bahama species of *Cyclura*—The main threats to the continued survival of all these species include habitat destruction for resort development and the introduction of feral animals. Introduced mongooses, cats, and dogs prey upon the iguanas, especially the young and juveniles, and destroy nests. Introduced goats may compete for food and humans kill them for food or sport. Nearly all these iguanas have very small ranges; many are limited to a single

Continued on page 3



Currently, no populations of the Wyoming toad are known to exist.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of January:

Region 2—Powerline mortality continues to be a significant drain on migratory whooping cranes (*Grus americana*), with the most recent loss occurring near Waco, Texas, in October

1982. Mortality occurs in large part when birds are flying between roosting and feeding areas. This represented the third whooping crane powerline mortality recorded since 1981. The total worldwide (captive and free-flying) whooping crane population now stands at 115, down slightly from the recorded high of 119 in 1980.

The Buenos Aires Ranch, in southeastern Arizona, is believed to contain the only suitable masked bobwhite (*Colinus virginianus ridgwayi*) habitat remaining in the U.S. Past Service efforts have reintroduced the Endangered masked bobwhite to the ranch and worked with the owner to improve bobwhite habitat by limiting grazing. The ranch was sold in November, and the Service is currently trying to work out a similar agreement with the new owner to limit grazing on about 5,000 acres of key bobwhite habitat. The survival of the subspecies in the wild likely depends upon how well that key habitat is protected.

Personnel involved in implementing the U.S./Mexico Agreement for the Kemp's ridley sea turtle (*Lepidochelys kempii*) met, in conjunction with the Sea Turtle Workshop, at Texas A&M University to plan activities for the next nesting season. This was the last meeting Jack Woody attended as Region 2 Staff Specialist for Endangered Species. After more than 8 years in Endangered Species, Jack has accepted a position as Deputy Assistant Regional Director (DARD) for Wildlife Resources in Region 2. Jack's knowledge and expertise in Endangered Species will be missed.

On January 27-28, a joint meeting of the Arizona, New Mexico, and Texas Plant Recovery Teams was held in Albuquerque. The meeting was attended by 25 botanists and other interested parties. After general sessions, each team met separately and discussed the species recommended for listing through completed status reports. Each team developed priorities for listing, and discussed additions and deletions to the candidate lists. Draft recovery plans for several cacti were also reviewed.

Region 3—Regional personnel will sponsor a training program on emergency care and handling of ill and injured raptors for State representatives at the University of Minnesota's School of Veterinary Medicine-Raptor Rehabilitation Center on March 3-4.

Region 5—On January 10, New York State biologists captured an adult male bald eagle (*Haliaeetus leucocephalus*) which was released in 1978 at Montezuma National Wildlife Refuge (New York) as part of the State's bald eagle restoration program. It was in the company of an unbanded adult female eagle, which was also captured. Biologists are hopeful that another pair will begin nesting in or near the State. Before the eagles were released back into the wild, each was fitted with a radio-transmitter so that their movements can be tracked.

Adding to the significance of the capture, the male bird was one that had been raised at the Service's Patuxent Wildlife Research Center (PWRC). The

Continued on page 8

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2**: Arizona, New Mexico, Oklahoma, and Texas. **Region 3**: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4**: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5**: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6**: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7**: Alaska.

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RULEMAKING ACTIONS—January 1983

Seventeen Reptiles

Continued from page 1

island. While legal protection is afforded these iguanas in the Bahamas, the law is not enforced. All of these species are listed in the International Union for the Conservation of Nature and Natural Resources (IUCN) Red Data Book as being species of concern.

- Cuban and Cayman Islands iguanas—There are three subspecies of *Cyclura nubila* inhabiting Cuba (mainland and Isla de Pines and the Cayman Islands). The threats to these iguanas are similar to those of the Bahama *Cyclura*. *C. n. nubila* is protected in Cuba.

- Turks and Caicos iguana—This species is found on most of the islands in the Turks and Caicos group. The same threats which apply to the Bahama *Cyclura* also apparently apply to this species. No specific protection laws have been enacted and although several cays where this species occurs are supposed to be preserved, protection is nil.

- Jamaican iguana—Until recently, this species was thought extinct. However, it does survive probably in very low numbers in the Hellshire Hills, an area that is proposed to be developed. If this occurs, the remaining small population will probably become extinct.

- Round Island skink—This species is presently confined to Round Island off the coast of Mauritius. In 1974, the population was thought to be between 4,000-5,000 but declining. Factors contributing to the decline of other species on Round Island are also thought to be contributing to the decline of this species.

- Aruba Island rattlesnake—The habitat of this rattlesnake is shrinking as a result of increasing human activity. Collection may also be contributing to its decline.

- Lar Valley viper—This species is confined to the alpine Lar Valley in Iran. The planned construction of a dam for a water reservoir would eliminate its habitat.

- Central American river turtle—This large river turtle is found only in the coastal lowlands of southern Mexico, northern Guatemala, and Belize. It is hunted extensively for its meat and has been seriously depleted throughout much of its range. This exploitation could lead to its extinction.

Background

All of the newly proposed species, with the exception of the Round Island skink, were included in an August 15, 1980, notice of review that was conducted by the Service to determine whether enough information existed to list them as Endangered or Threatened. The Service received seven comments in response to the notice, most of which supported listing.

However, there were a number of comments on the Asiatic box turtle (*Cuora trifasciata*) and Chinese big-headed turtle (*Platysternon megacephalum*) which noted that these species are more widely distributed than the notice indicated and that potential threats were not demonstrated at this time. Gray's monitor lizard (*Varanus grayi*) was also included in the notice of review; data received since publication of the notice indicate that listing of this

species under U.S. law is not warranted at this time. These three reptiles were not proposed, but the Service will continue to review the status of these species. One additional species from the 1980 notice, the Hierro giant lizard (*Gallotia simonyi*) was not proposed, since it is now believed to be extinct.

The Round Island skink, not included in the 1980 notice, is proposed since the Service believes that sufficient data exist to do so. The notice treated the iguana *Cyclura nubila* as a single species; in the proposal, the subspecies are treated individually because of the different degrees of threats to them.

If these species are listed under the Act, all prohibitions of Section 9(a)(1) would apply, making it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale these species in interstate or foreign commerce. It would also be illegal to sell, deliver, carry, transport, or ship any such wildlife which was illegally taken.

Comments or suggestions from any interested party concerning this proposal should be made in writing to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. All submissions must be received by March 21, 1983. Public hearing requests must be received by March 7, 1983.

Service Proposes Raptor Documentation

A 1978 amendment to the Endangered Species Act of 1973 exempts holders of certain birds of prey from the prohibitions of Section 9 of the Act. A recent rule published by the Service proposed documentation requirements that must be satisfied to exempt raptors under this provision (F.R. 1/12/83).

Only raptors that were held in captivity or in a controlled environment on November 10, 1978, and their progeny qualify for this exemption. The Service intends to rely on pre-existing documentation on these birds to determine a particular bird's qualification for the exemption.

The legislative history of this raptor amendment indicates that its purpose is to encourage captive production of raptors for conservation, recreation, scientific, and breeding purposes to alleviate some of the human pressures on wild raptors and increase genetic diversity in captive populations. Comments on this notice were due by February 11, 1983.

Common Name	Scientific Name	Proposed Status
Serpent Island gecko	<i>Cyrtodactylus serpensinsula</i>	Threatened
*Acklins ground iguana	<i>Cyclura rileyi nuchalis</i>	Threatened
*Allen's Cay iguana	<i>Cyclura cyclura inornata</i>	Threatened
*Andros Island ground iguana	<i>Cyclura cyclura cyclura</i>	Threatened
Cayman Brac ground iguana	<i>Cyclura nubila caymanensis</i>	Threatened
Cuban ground iguana	<i>Cyclura nubila nubila</i>	Threatened
*Exuma Island iguana	<i>Cyclura cyclura figginsii</i>	Threatened
Grand Cayman ground iguana	<i>Cyclura nubila lewisi</i>	Endangered
Jamaican iguana	<i>Cyclura collei</i>	Endangered
*Mayaguana iguana	<i>Cyclura carinata bartschi</i>	Threatened
Turks and Caicos iguana	<i>Cyclura carinata carinata</i>	Threatened
*Watling Island ground iguana	<i>Cyclura rileyi rileyi</i>	Endangered
*White Cay ground iguana	<i>Cyclura rileyi cristata</i>	Threatened
Round Island skink	<i>Leiopisma telfairii</i>	Threatened
Central American river turtle	<i>Dermatemys mawii</i>	Endangered
Aruba Island rattlesnake	<i>Crotalus unicolor</i>	Threatened
Lar Valley viper	<i>Vipera latifii</i>	Endangered

*Bahama species of *Cyclura*

Striped Bass Status Review

Results Published by NMFS

A status review of the striped bass (*Morone saxatilis*) was recently conducted by the National Marine Fisheries Service (NMFS), and its results were published in the *Federal Register* (F.R. 1/14/83). This study was conducted in response to a petition submitted by Strippers Unlimited of South Attleboro, Massachusetts, to add the Chesapeake Bay strain of the fish to the U.S. List of Endangered Wildlife and Plants.

Based principally on measures the Federal and State agencies have adopted and implemented to conserve the striped bass, NMFS has determined that a proposed rule to list the striped bass is not warranted at this time. Comments on the petition and status review should be submitted by March 15, 1983, to the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C. 20235. For further information on this action, contact Mr. Richard B. Roe, Acting Director, Office of Protected Species and Habitat Conservation, Washington, D.C. 20235 (202/634-7471).

Petition

The petition states that striped bass stocks are declining at a drastic rate and that the Chesapeake Bay stocks, which often supply the bulk of the coastal migrating population, are suffering from successive years of reproductive failure. The petition used commercial landings in the Chesapeake Bay and Maryland's Department of Natural Resources annual young-of-the-year survey to document the decline in relative abundance of striped bass in the Chesapeake Bay. The NMFS recognizes that the petition addresses a serious problem to the commercial and recreational fisheries on the Atlantic coast and, more important, to the well-being of the fish, but believes that localized data, such as were presented with the petition, may not give a reliable indication of the status of the striped bass throughout its range.

The population size of striped bass along the Atlantic coast depends on recruitment and probably changes yearly. The most notable cause of this fluctuation has been the periodic appearance of a larger than average (dominant) year class. Such dominant year classes have been cyclic, with a period of about 6 years until 1970. Most researchers and fisheries managers, however, agree that there has been a reduction in the size of the population of striped bass. The extent of this decline is difficult, if not impossible, to document in terms of absolute numbers because of

the lack of reliable estimates of the population size along the Atlantic coast.

The petition also states that contaminations of eggs and larvae by toxins is the major cause of poor reproductive success of the striped bass in Chesapeake Bay. This conclusion apparently is based on observations of hatchery operations in one river system and may not be applicable to the entire Chesapeake Bay. Preliminary results of intensive tests conducted by the U.S. Fish and Wildlife Service (FWS) have not identified any substance that is significantly correlated to survival and growth of fry. These studies do suggest a trend of increasing mortality with increasing concentration of PCB's in eggs.

Conservation Measures

In October 1981, The Interstate Fisheries Management Plan for Striped Bass was adopted by all involved States. The plan recognizes that continued extensive harvest of striped bass in the Chesapeake Bay undoubtedly will have adverse effects on the spawning stock of striped bass. It recommends fishing restrictions that the Coastal States should adopt to increase survival of recruits to maturity and to prevent excessive exploitation of mature fish.

Several States have implemented many of the protective measures recommended in the Plan and other States have pending legislation to enable them to do so. In addition, Congress may provide incentives to promote full compliance with and implementation of the Plan by all involved States. The NMFS believes implementation of this plan is the best action that can be taken at this time to reduce pressure on spawning stocks and enhance the ability of the striped bass in Chesapeake Bay to recover from its decline.

The Emergency Striped Bass Study, called for by Section 7 of the Anadromous Fish Conservation Act, consists of studies to monitor the status of the striped bass population and to determine the factors responsible for the decline in numbers of these fish. Execution of these studies is the joint responsibility of NMFS and FWS.

Long-range research conducted under the Emergency Striped Bass Study has not been completed. This research will supplement studies being conducted under the State/Federal Striped Bass Program (The Interstate Fisheries Management Plan). The information from these sources will eventually enable NMFS to assess more reliably the status of striped bass and to determine the effects of various substances, environmental conditions, and

other factors on populations of striped bass.

The striped bass is distributed along the Atlantic Coast from the St. Lawrence River, Canada, to the St. John's River, Florida; in the Gulf of Mexico from western Florida to Louisiana; and introduced along the Pacific Coast from British Columbia, Canada to Esenada, Mexico. The striped bass has a number of other vernacular names, including striper, linesider, rockfish, and rock.

Striped bass grow to a large size; the heaviest specimens on record weigh about 125 pounds and the longest specimen was estimated to be about 6 feet. The species is long-lived, with a life span of 20 or more years. The species is anadromous, spawning in spring in coastal streams and in brackish waters and then returning to coastal marine waters. A major spawning site for striped bass along the Atlantic coast has been Chesapeake Bay and its tributaries.

Wyoming Toad

Continued from page 1

be premature to determine Critical Habitat at this time. Publication of a Critical Habitat map could also subject the rare toad to further danger by unauthorized collection. Nevertheless, the Wyoming toad's habitat will receive protection under Section 7.

Public Comment Requested

Comments on the proposed rule are requested from all interested persons, agencies, and individuals, and should be received by the Regional Director, Region 6, U.S. Fish and Wildlife Service, by March 28 1983. Requests for a public hearing should be received by March 14, 1983.

CITES NEWS— January 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species.

The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

CITES Export Approvals

The Service approved exports of lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), Alaskan gray wolf (*Canis lupus*), Alaskan brown bear (*Ursus arctos*) and American alligator (*Alligator mississippiensis*) taken in the 1982-83 season (F.R. 12/7/82) from the following States:

Lynx—Alaska, Idaho, Minnesota, Montana, and Washington

River otter—Alabama, Alaska, Arkansas, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, New Hampshire, New Jersey, New York, North Carolina, Oregon, South Carolina, Vermont, Virginia, Washington, and Wisconsin.

Alaskan gray wolf—Alaska

Alaskan brown bear—Alaska

American alligator—Florida and Louisiana

Final findings are made annually on a State-by-State basis for Appendix II species that are exported. Approval is given on the grounds the both Scientific Authority and Management Authority criteria have been met.

Sea Turtle Import Ban Under Review

Federal regulations on Threatened sea turtles are being reviewed by the Fish and Wildlife Service and the National Marine Fisheries Service, which share jurisdiction over certain marine species (F.R. 1/3/83). Particular emphasis is on the question of whether or not to lift the current prohibitions on U.S. trade in products of Threatened sea turtles. This review is in response to requests from several organizations to reconsider the import ban, and in anticipation of an upcoming meeting in Botswana of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) that will consider if trade in certain populations of sea turtles should be allowed.

The loggerhead (*Caretta caretta*) and certain populations of green (*Chelonia mydas*) and olive ridley (*Lepidochelys olivacea*) turtles are listed as Threatened pursuant to the Endangered Species

Act. Under special rules, trade in the Threatened sea turtles for commercial purposes is prohibited. While formulating the rules, both Services considered whether or not to allow an exception for sea turtle mariculture operations but decided against it. A decision was made against an exception, and it was subsequently upheld in the courts. All of the Threatened sea turtles are also listed on Appendix I of CITES. As a general rule, Appendix I species cannot be imported or exported for commercial purposes.

The Services have decided to review their rules prohibiting trade in the Threatened sea turtles for the following reasons:

(1) The nations of Surinam and Reunion have submitted proposals to CITES to allow "ranching" (rearing in a controlled environment specimens taken from the wild) of green turtles. These proposals will be taken up at the April 1983 CITES conference in Botswana. If the parties move these populations to Appendix II, commercial trade could resume under permit from the exporting country.

(2) Individuals of Appendix I species that are "bred in captivity" for commercial purposes are deemed to be included in Appendix II, in accordance with Article VII.4 of CITES. This provision was the subject of a resolution by the Parties to CITES in 1979. Questions have been raised by the Govern-

ment of the Cayman Islands and the United Kingdom Management Authority about the application of this resolution to certain Appendix I species, including the green turtle. It has been proposed that this issue be discussed by the CITES Technical Experts Committee and addressed at the Botswana conference.

(3) On January 22, 1982, the Pacific Legal Foundation and the Association for Rational Environmental Alternatives filed a petition for a mariculture exemption to the rules prohibiting trade in Threatened green turtles.

(4) The Cayman Turtle Farm (CTF), Ltd., has requested that tourists be allowed to bring into the U.S. items from farm-produced turtles, to allow farmed products to be shipped through the U.S., and to permit importation of farmed products in the U.S. for commercial purposes. The Cayman Islands government has given assurances that it would prevent CTF from taking any additional turtles or eggs from the wild, and would impose a numbering and documentation system on traded items.

The original deadline for comments on the proposal was February 2, 1983, but it was extended to February 17, 1983, in a subsequent notice (F.R. 2/4/83).

Import/Export License Requirement Clarified

The requirement that persons be licensed by the Service in order to engage in business as an importer or exporter of fish or wildlife and their parts or products has been in effect since August 25, 1980. A recent final rule clarifies two questions that have since been raised regarding the implementation of this requirement (F.R. 1/12/83).

The two questions were: What records need to be kept in order to satisfy the licensing requirement? and May a non-resident (especially foreign fur buyers) obtain a license? The rule states that normal business records should satisfy the record-keeping requirement and that a separate (or duplicate) set for the Service is not required. Secondly, it states that residence in the United States is not required to obtain a license.

Under the license requirements which went into effect on January 1, 1981, licensees must: (1) Pay \$50 for a 2-year license; (2) keep certain records and retain them for 5 years; (3) allow the Service to inspect records and inventories of imported wildlife; and (4) file any requested reports. In addition to being licensed, persons who import or export

species protected by specific laws also must obtain the appropriate Federal and State permits. The licensing system does not replace the permit requirements of 50 CFR Part 17 or of any other law or regulation.

In effect, the licensing provision represents an overall comprehensive program which monitors, exclusively, the commercial import and export of wildlife and wildlife products. To relieve the burdensome demands that the provision would impose on small entities, particularly small businesses and individuals who only occasionally import or export wildlife for gain or profit, the Service amended the rule on December 31, 1980, to except persons if the value of the wildlife they import or export totals less than \$25,000 a calendar year.

Non-residents should submit inquiries about the license, requests for application forms, or completed applications to the Chief, Division of Law Enforcement, U.S. Fish and Wildlife Service, P.O. Box 28006, Washington, D.C. 20005 (202/343-9242). For further information on the final rule, contact John T. Webb at the above address.

Recovery Plans for Laysan Duck, Sonoran Pronghorn Approved

Three recovery plans were approved in December 1982: Eureka Valley Dunes Recovery Plan (12/13/82), which will be featured in the March 1983 BULLETIN; Laysan Duck Recovery Plan (12/17/82); and Sonoran Pronghorn Recovery Plan (12/30/82). The Culebra Island Giant Anole Recovery Plan, which was approved on January 28, 1983, will be featured in a later issue of the BULLETIN.

Laysan Duck

The Laysan duck (*Anas laysanensis*) is a small, dark brown duck endemic to Laysan Island in the northwestern or leeward Hawaiian Islands. Severe habitat damage suffered in the early 1900's almost resulted in this duck's extinction, and in 1967 it was officially listed as Endangered. At times, it has been considered one of the rarest ducks in the world.

Laysan is a 1,020-acre island about 709 miles northwest of Kaua'i, and is now part of the Hawaiian Islands National Wildlife Refuge. In 1890, prior to establishment of the refuge, Laysan was leased to a private company for guano mining. Later, in 1903 or 1904, rabbits were introduced on the island, at least in part to provide a more varied diet for the workers. After the departure of the miners in 1910, the rabbits were no longer held in check and their numbers exploded, resulting in the rapid devegetation of the island. The ensuing sandstorms, together with a lack of food, led to the extinction of the Laysan millerbird (*Acrocephalus familiaris*), rail (*Porzana palmeri*), and honeycreeper (*Himatione sanguinea freethi*). The habitat

degradation also brought the Laysan finch (*Telespiza cantans*) and duck to the brink of extinction.

After the severity of the impact was recognized, a campaign to eradicate the exotic rabbits was started. They were finally eliminated during the expedition of the U.S.S. Tananger (a U.S. Navy minesweeper) in 1923. The island then revegetated both naturally and through plants introduced by the Tananger expedition. Current habitat conditions are thought to approximate the situation prior to introduction of the rabbits, except for the elimination of several birds and plant species and the establishment of a few exotic plants. Estimates of the Laysan duck population on the island have fluctuated significantly over the years, from 20 in 1923 to about 510 in July 1980, although different survey techniques could account for a large part of the variation. As recently as 1973, only 25 ducks were counted at the island's central, salt-water lagoon; 162 were seen the previous year. The recovery plan does emphasize that the population is cyclic and lows will occur. It is thought that the carrying capacity of Laysan Island may be 500-600 ducks.

The prime objectives of the recovery plan are to insure the protection of the Laysan duck's natural island habitat and to improve the status of the species from Endangered to Threatened. Because of the limited habitat of Laysan Island and its vulnerability, the duck probably will always be considered a Threatened species. Its continued existence will depend on two factors: continued complete protection of Laysan Island and a viable captive propagation program.

Laysan Island is managed as part of the Hawaiian Islands National Wildlife Refuge. It is also a designated Research Natural Area under the International Biological Program, and is being considered for inclusion in the National Wilderness Preservation System. Only scientists on Service-approved research projects are permitted onto the island; all other entry is strictly prohibited. Unfortunately, the possibility still exists that exotic and potentially harmful animals could be introduced on the island, either purposely or through an accident such as a ship running aground. The plan therefore calls for monitoring the island to detect any introductions, along with development of a contingency plan to solve any resulting problems. Annual censusing of the duck population should continue, and inventories of the island habitat and vegetative community should be conducted at 5-year intervals.

One habitat feature of particular impor-

tance at Laysan is the lagoon, which is a breeding area for the brine flies and other insects which appear to be the main food source for the Laysan duck. Since the lagoon basin is extremely flat, slight fluctuations in the water level cause great differences in the surface area, and the habitat's carrying capacity could be significantly affected. The lowest water level recorded (July 1973) corresponds with the low population that year of only 25 ducks. It is important, therefore, that lagoon water levels be recorded in a regular and systematic fashion.

Another important part of the plan is a coordinated captive propagation effort to maintain healthy stock for reintroduction on Laysan if the wild population becomes extinct. There are many zoos and breeding farms which have Laysan ducks in captivity, and propagation has been highly successful. The plan calls for a minimum of four breeding farms with at least 20 birds each. A bird exchange program among the facilities is encouraged to prevent inbreeding and to maintain their genetic health.

Details on the plan and its implementation can be obtained from the Portland Regional Director (see page 2 for address).

Sonoran Pronghorn

The Sonoran pronghorn (*Antilocapra americana sonoriensis*) is one of the few large mammals recognized as being endangered in the United States today. The drying of the major rivers and overgrazing significantly altered Sonoran pronghorn habitat in southwestern Arizona by the 1930's and are the probable causes of the subspecies' decline.

Unregulated hunting undoubtedly contributed to the animal's initial decline. However, with the protection that has been provided for the past 40 years, the pronghorn should have recovered if hunting was indeed a primary factor.

Adequate records exist that indicate pronghorn antelope were distributed throughout southern Arizona prior to 1900. However, the historic distribution of the Sonoran subspecies is not certain. It is presently found in Arizona on the Cabeza Prieta National Wildlife Refuge, Organ Pipe National Monument, and the Luke Air Force Gunnery Range. It may also occur on portions of Papago Indian Reservation. In Mexico, the subspecies is believed to be confined to the northwestern part of the State of Sonora.

Data compiled by the Arizona Game and Fish Department over the past 10 years indicate a pronghorn population in Arizona of more than 50 but probably



The Laysan duck has, at times, been considered one of the rarest ducks of the world.

less than 150 individuals. The population in Mexico is believed to number between 200-350. Economic exploitation of habitat (grazing and agriculture) and poaching are thought still to be causing numerical and habitat losses in Mexico.

The taxonomy of the subspecies is poorly understood as little taxonomic material is available. Biological data concerning even basic natural history information such as reproductive capabilities, water requirements, food habits, and home range are not known.

Recovery Plan

The objective of the Sonoran Pronghorn Recovery Plan is to maintain existing population numbers and distribution of the animal while developing techniques to increase both. The plan establishes as a goal the maintenance of an average of 300 animals for a 5-year period before delisting of the subspecies could be considered.

A major problem facing the recovery of the Sonoran pronghorn is that the recovery methods employed in Mexico may have to be quite different from those used in Arizona. In the U.S., most of the habitat where the pronghorn is found is reasonably secure, controlled either by the National Park Service, the Fish and Wildlife Service, or the Department of Defense. However, in Mexico the habitat occupied by the pronghorn is rapidly deteriorating and a second comprehensive plan may have to be developed and implemented by Mexico if the subspecies is ever to completely recover.

A second problem is that present knowledge indicates no clear means to increase either population densities or range. While range extension through habitat management and/or transplanting may offer potential as a means of increasing the population, no data exist describing suitable transplant sites, capture methods, or the number of animals that could be removed safely from the existing population.

The plan calls for continuous compilation of data on the existing U.S. population and for taxonomic research. It also provides for assistance to the Mexican government in establishing and implementing a management plan for the pronghorn population in Mexico.

Two employees of the Albuquerque Regional Office recently met with representatives of the Arizona Game and Fish Department and Luke Air Force Base to initiate a study on Sonoran pronghorn ecology. The study plans include capturing and radio-collaring six to eight animals this spring on Cabeza Prieta National Wildlife Refuge.

For further information on the Sonoran Pronghorn Recovery Plan, contact the Albuquerque Regional Director (see page 2 for address).

Proposed Finding on Incidental Take of San Bruno Mountain Species

A joint Federal Environmental Assessment and California Environmental Impact Report (EA/EIR) has been prepared for the proposed incidental take of the mission blue butterfly (*Icaricia icaroides missionensis*), San Bruno elfin butterfly (*Callophrys mossii bayensis*), and San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) under a conservation plan pursuant to Section 10(a) of the Endangered Species Act. On the basis of the EA/EIR and related documents, the Service has proposed to determine that the possible incidental take of these Endangered animals would not constitute a major Federal action significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act, and that a separate Federal Environmental Impact Statement will not be prepared (F.R. 1/26/83).

The Service is considering a permit application from several local governments for incidental take of the Endangered species during a development project within the San Bruno Mountain area of San Mateo County, California. Such a permit would be conditional on implementation of the San Bruno Mountain Area Habitat Conservation Plan through an agreement among concerned Federal, State, and local parties.

Conservation Agreements to Aid Some Candidates for Listing

The Service recently further defined and formalized its policy on the use of Conservation Agreements (CAs), a tool authorized under Section 5(a) of the Endangered Species Act to help conserve vulnerable but non-listed plants and animals native to the United States. Among the contents of each CA will be a description of necessary actions, an identification of the party responsible for accomplishing each action, an implementation schedule, and a plan for monitoring and evaluating the results. CAs are not legal contracts, but agreements entered into by the Service and one or more Federal or State agencies, public or private organizations, institutions, or individuals for conservation through voluntary cooperation. It thus provides an incentive for voluntary action to meet the conservation standards of the Act.

Although CAs could be reached for listed species as part of a recovery program, they are expected to be used primarily for candidates for listing. The

policy is expected to be applicable to a relatively small number of species which could benefit from quick, uncomplicated, and noncontroversial action. CAs will be used only for species where all threats to every population can be removed completely and expeditiously for as long as the agreement remains in effect. If only some threats to the species would be removed, or only some sites completely protected, or specific conservation provisions of the Act are needed, then listing is still necessary and the CA approach inapplicable. A CA may be considered as an alternative to listing, as an interim measure in setting priorities among the many candidates needing listing, but it will not foreclose the possibility of future listing; a signed CA will not remove a species from official candidate status unless permanent recovery is achieved.

In accordance with the policy directive, individual CAs will be summarized in the BULLETIN as they are reached.

1983 Appropriations

The Department of the Interior's appropriations bill was signed into law by President Reagan on December 30, 1982. The budget for the Endangered Species Program totals over \$20 million; Congressional add-ons included in this total will provide \$2 million for Section 6 State grants, \$216,000 for peregrine falcon recovery, \$100,000 each for California condor and whooping crane telemetry, and \$987,000 for law enforcement. Included elsewhere within the Service's 1983 appropriations was an additional \$150,000 for implementation of the Western Hemisphere Convention.

Funding from the Land and Water Conservation Fund was appropriated to purchase habitat which will benefit the following listed species:

American crocodile	Crocodile Lake NWR	\$2,766,000
Bald eagle	Bear Valley NWR	812,000
Kirtland's warbler	Ogemaw State Forest, MI	500,000
West Indian manatee	Chassahowitzka NWR	500,000
Plymouth red-bellied turtle	Massasoit NWR	275,000

Regional Briefs

Continued from page 2

capture was the first proven instance of captive-raised eagles from PWRC surviving to adulthood, although researchers have felt all along that they would do well. Regional and State biologists are jubilant about the discovery.

Region 6—The Black-footed Ferret Advisory Team (BFAT) met in Meeteetse, Wyoming, on December 14. Discussions centered on future research and management in the Meeteetse area. In addition, a management plan is being prepared for the Meeteetse population. Biologists are again conducting winter surveys under appropriate snow and weather conditions.

Whooping crane migrations continue to be monitored each spring and fall as part of the Cooperative Whooping Crane Tracking Project. The Service's Pierre, South Dakota, field office gathers sighting reports from both private individuals and organizations as well as State and Federal agencies. Since 1977, 37 birds have been color-marked in connection with the project. In 1982, two family groups with radioed young were successfully monitored all the way to Aransas National Wildlife Refuge, Texas. Both families left the nesting grounds on or about October 8, moving to central Saskatchewan, where they remained until October 28. Both then traveled quickly through the States, arriving at Aransas on November 3 and 4. Recorded observations of migrant whoopers began on September 15 in Canada and September 19 in the U.S. Observations were reported from Alberta (2), Saskatchewan (37), North Dakota (8), South Dakota (10), Nebraska (9), Kansas (3), Oklahoma (5), and Texas (4). Arrivals at Aransas National Wildlife Refuge began October 18.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	17
Birds	52	14	144	3	0	0	213	25
Reptiles	8	6	55	8	4	0	81	6
Amphibians	5	0	8	3	0	0	16	2
Fishes	29	4	11	12	0	0	56	20
Snails	3	0	1	5	0	0	9	1
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	6
TOTAL	199	44	444	48	7	24	766	81**

*Separate populations of a species, listed both as Endangered and Threatened are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of species currently proposed: 23 animals
6 plants

Number of Critical Habitats listed: 55
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 75
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

January 31, 1983

New Publications

A 16-page illustrated booklet entitled *Patuxent Wildlife Research Center* is available from the Publications Unit, Fish and Wildlife Service, Washington, D.C. 20240. The Service's research facility near Laurel, Maryland, conducts programs on endangered species, environmental contaminant evaluation, and migratory birds. Among the listed species receiving special attention at the center and its field stations are the whooping crane, bald eagle, Puerto Rican parrot, Andean condor, Mississippi sandhill crane, masked bobwhite, and Aleutian Canada goose.

The 1980 U.S. Annual Report for the Convention on International Trade in Endangered Species of Wild Fauna and

Flora (CITES) is now available. Copies may be purchased in printed form (\$22.00) or in microfiche form (\$4.50) from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 (703/487-4650). Written requests for report number PB83 143198 should be made to the attention of the Sales Desk. Purchase requests may be made by telephone if the purchaser has an account with NTIS or if the purchaser has a major credit card. The report, produced in accordance with CITES by the Federal Wildlife Permit Office (WPO), summarizes U.S. international trade in CITES listed species. The 1979 annual report also is available from NTIS (report number PB82 128646; \$18 printed copy or \$4 microfiche).

February 1983 Vol. VIII No. 2

ENDANGERED SPECIES

Technical Bulletin Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Stork Population Declines; Endangered Status Proposed

United States breeding populations of the wood stork (*Mycteria americana*) have declined over 75 percent from their 1930 levels. The Service has proposed Endangered status under the Endangered Species Act to protect wood stork populations residing and breeding east of the Alabama-Mississippi State line (F.R. 2/28/83).

Breeding of the species in the U.S. is now restricted to Florida, southeastern Georgia, and South Carolina. Formerly, nesting occurred in Texas, Louisiana, Mississippi, and Alabama. U.S. breeding pairs have declined from over 20,000 in the 1930's to 4,800 in 1980. If this trend continues, the birds are expected to become extirpated as U.S. breeders by the turn of the century.

The wood stork occurs from northern Argentina to the southern U.S. The present U.S. breeding population, which would be protected by the proposed rule, is disjunct from the population which breeds from Mexico to South America. Wood storks from Mexico disperse into the southern U.S. (e.g., California and Texas) after breeding.

Causes of Decline

The decline of the wood stork as a U.S. breeding bird is believed to be primarily due to the loss of suitable feeding habitat. This is especially true for the south Florida rookeries where repeated nesting failures have occurred despite protection afforded the rookeries. Feeding areas in south Florida have decreased by about 35 percent since 1900 due to man's alteration of wetlands.

In addition, man-made levees, canals, and floodgates have greatly changed natural water regimes in south Florida. Optimal water regimes for the wood stork involve periods of flooding, during which prey fish populations increase, alternating with drying periods, during which fish are concentrated at high densities during the nesting season.

Loss of nesting habitat (primarily cypress swamps) may be affecting wood storks in central Florida where nesting in non-native trees and in man-made impoundments have been occurring recently. Raccoon predation has some-

times been severe at certain central Florida rookeries. Disturbance by humans during the nesting season has been observed to cause adult wood storks at some rookeries to leave their nests, exposing eggs and young birds to predation and the elements.

Critical Habitat Not Proposed

Critical Habitat is presently considered neither prudent nor determinable for the U.S. breeding population of the wood stork. Wood stork rookeries and feeding areas change over time and rigidly defined Critical Habitat boundaries describing presently utilized areas may not be adequate for long-term conservation of the species.

The wood stork's feeding area may be separated by large (up to 130 km) distances from its rookeries, and post-breeding dispersal of the U.S. breeding birds extends throughout most of the southeastern U.S. Inclusion of such large areas, even though they may be important to the birds' biology, would be misleading because the stork uses only very limited resources over these large areas. Finally, publication of Critical Habitat maps in the *Federal Register* as required by Section 4(b)(5) of the Act, might increase the chance that wood stork rookeries would be subjected to uncontrolled human disturbance or vandalism.

Effects of Rule

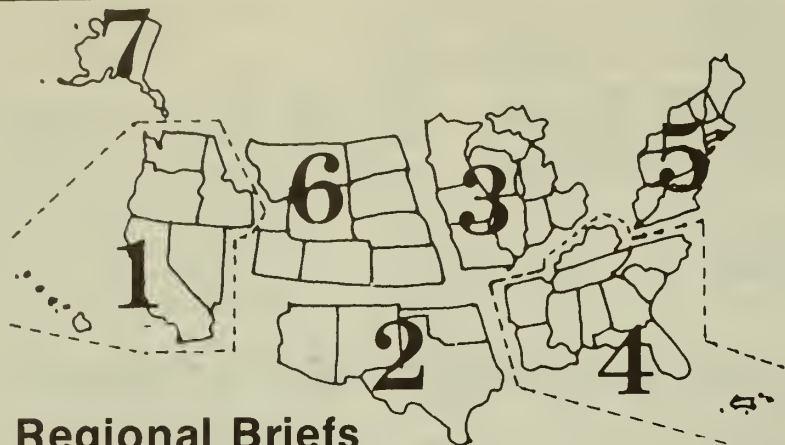
Under Section 7 of the Act, Federal agencies must insure that any activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species. The principal agency affected by listing the wood stork as Endangered would be the U.S. Army Corps of Engineers, which issues permits for the discharge of dredged or fill materials in U.S. waters under Section 404 of the Clean Water Act of 1977. The Corps also carries out Congressionally authorized water development projects. The listing of this species could also affect future permitting activities by the Environmental Protection Agency (EPA), under Section 402 of the Clean Water Act. No present conflicts with potential EPA permits are known to the Service.

Conservation of the wood stork would allow the species to continue to serve as an ecological indicator of wetland health and to provide pleasure as a natural attraction, particularly in Florida. The wood stork is the only North American breeding stork and is an important attraction at heavily visited natural areas such as Everglades National Park and Corkscrew Swamp Sanctuary in south Florida.

Continued on page 8



The wood stork (*Mycteria americana*) is a large, long-legged, white wading bird with an unfeathered head and stout bill.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of February:

Region 1—For the first time, *Natural History* magazine has devoted practically a complete issue to one geographic region. Its December 1982 edition,

entitled "Hawaii—Showcase of Evolution," presents an overview of the State's unique natural history from the first plants and animals to colonize the volcanic islands, through today's ecological modifications, into a future of environmental change and choice.

Two of the ten articles in the issue

were authored by members of the Service's Pacific Islands Office in Honolulu. Dr. Robert J. Shallenberger, manager of the Hawaiian and Pacific Islands National Wildlife Refuge Complex, writes of the factors limiting the population and distribution of the Endangered Hawaiian monk seal (*Monachus schauinslandi*). John I. Ford, a fishery biologist in Environmental Services, relates the evolutionary biology and adaptive strategies of stream fauna in Hawaiian and Pacific high island streams. Other articles focus on specific aspects of a Pacific species or group of species, and help to illustrate Hawaii's fragile ecosystem.

A record number of Hawaiian monk seals were observed on Tern Island on January 29, 1983, when 102 were seen basking on the beaches of the former Coast Guard LORAN station. The island is part of the Hawaiian Islands National Wildlife Refuge.

The Sacramento Endangered Species Office (SESO) staff conducted an educational field trip survey of valley elderberry longhorn beetle habitat (*Desmocerus californicus dimorphus*) for the U.S. Army Corps of Engineers. Specific habitat along the Sacramento River was walked, and valley elderberry (*Sambucus* ssp.) with characteristic beetle borings were examined. Such field trips promote coordination and assistance from Corps personnel in identifying potential endangered species concerns.

Data on the life history of the Delta green ground beetle (*Elaphrus viridus*) will be collated and evaluated by Dr. Richard Arnold of the University of California at Berkeley and Dr. David Kavanaugh of the California Academy of Science. This study is partially funded by The Nature Conservancy and will be conducted from February through April 1983.

The Service is committed to funding a 3-year program designed to stop the decline of the Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*). This program is directed toward determining and monitoring the population status of this "k-rat," investigating and identifying generic and microhabitat characteristics, and developing a habitat management plan. These activities, which are pursuant to the recovery plan, are being designed by SESO and monitored by the California Department of Fish and Game (CDFG). The research began in January 1983, and the k-rat and vegetative studies are being conducted by faculty at the California Polytechnic State University at San Luis Obispo. The removal of exotic vegetation and clearing of dense vegetation is being conducted by the California Conservation Corps. The Service and CDFG hope that these efforts will provide preferred habi-

Continued on page 8

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

The **ENDANGERED SPECIES TECHNICAL BULLETIN** is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Service Announces Findings on Petitions and Status Reviews

Initial findings on substantiality of information for some petitions pending on October 13, 1982, and on other petitions received subsequently, have been published by the Service (F.R. 2/15/83). This was done to implement Section 4(b)(3)(A) of the Endangered Species Act, as amended in 1982, which requires that the Service determine if a petition to list or delist a species presents substantial scientific or commercial information warranting action. To the maximum extent practical, such findings are to be made within 90 days of receipt of the petition, and published promptly in the *Federal Register*. When a positive finding is made on a petition to list or delist a species, the Service is required to promptly commence a status review. Section 4(b)(3)(D)(i) requires a similar procedure for processing petitions to revise Critical Habitat.

Further, Section 2(b)(1) of the 1982 amendments requires that all petitions pending on October 13, 1982 (when the

amendments were signed into law), be treated as having been newly submitted on that date. Although this makes such past petitions subject to the new procedures, it provides that such new requirements "shall be deemed to be complied with" if similar requirements were satisfied before enactment of the 1982 amendments. The Service has used the criteria in 50 CFR 424.14 to define and evaluate petitions, and to distinguish them from general comments. All comments and petitions submitted to the Service after December 28, 1973, when the Endangered Species Act of 1973 was signed, were reviewed.

Most of the petitions had already been judged on their substantiality of information, and status reviews had been initiated when the findings were positive. The February 15, 1983, notice lists those petitions for which findings of substantiality required under Section 4(b)(3)(A) or 4(3)(D)(i) had not already been made, as well as several petitions

submitted after October 13, 1982, and gives the findings on each one. Five of the species affected under these petitions have now been placed under notice of review: a Guam plant, hayun lagu (*Serianthes nelsonii*); three listed kangaroos (*Macropus rufus*; *M. giganteus*, and *M. fuliginosus*); and the San Francisco tree lupine moth (*Grapholitha edwardsiana*). The Service is soliciting data on the status of these species.

By October 13, 1983, the Service must decide if the petitioned action is warranted for petitions that were pending on October 13, 1982, and for which findings of substantial information have been made. The majority of petitioned species requiring analysis by October 13, 1983, are the nearly 3,000 plants in categories 1 and 2 of the December 15, 1980, notice of review. For petitions received after October 13, 1982, a decision is required within 12 months of receipt of the petition.

Section 4(b)(3)(B) requires that petitioned species for which listing is warranted be proposed promptly, or that an explanation be provided in the *Federal Register* on why prompt proposal is not possible and on the progress in listing that is being made.

Designated Ports for Plants Proposed

The designation of ports of entry for the importation, exportation, or reexportation of plants is required by Section 9(f) of the Endangered Species Act of 1973, as amended. The Service recently proposed to designate such ports, coordinating its selection with the list of ports currently used by the Department of Agriculture (USDA) to implement several other Federal laws (F.R. 2/28/83).

Designation of specific ports of entry would facilitate the inspection process required by another provision of the Act, that listed plants be accompanied by certain required documentation. No such ports have ever been designated for plants.

USDA currently conducts an extensive enforcement program at many ports under the Federal Plant Pest Act and the Plant Quarantine Act for the purpose of preventing the introduction into the United States of certain plant diseases, injurious insects, and other plant pests. Under the Endangered Species Act, USDA is also responsible for enforcement of provisions which pertain to the importation, exportation, or reexportation of terrestrial plants, and will be required to conduct enforcement activities at designated plant ports of entry.

Consequently, USDA has recom-

mended that the ports proposed under the Act as ports of entry for plants coincide with those ports already designated and staffed to implement the above two pieces of legislation. The Service, therefore, has proposed that the following 14 USDA ports be established as designated ports for import, export, or reexport of any plants, including listed plants: Nogales, Arizona; Los Angeles, San Diego, and San Francisco, California; Miami, Florida; Honolulu, Hawaii; New Orleans, Louisiana; Hoboken, New Jersey (Port of New York); Jamaica, New York; San Juan, Puerto Rico; Brownsville, El Paso, and Laredo, Texas; and Seattle, Washington.

In addition, USDA has recommended and the Service proposed that the following ports be established to monitor traffic in particular groups or species of protected plants: Hilo, Hawaii and Chicago, Illinois—listed plants of Orchidaceae; Milwaukee, Wisconsin—roots of *Panax quinquefolius* (American ginseng); and Detroit, Michigan; Buffalo and Rouses Point, New York; and Blaine, Washington—listed plants from Canada and listed plants going into Canada. USDA has further recommended and the Service proposed that all USDA ports and all U.S. Customs ports on the U.S.-Canada border be designated ports for plants not required to be accompanied by documentation.

Written comments on this proposal should be mailed to: Director (LE), Fish and Wildlife Service, P.O. Box 28006,

Washington, D.C. 20005, or delivered weekdays to the Division of Law Enforcement, U.S. Fish and Wildlife Service, 2nd Floor, 1375 K Street, N.W., Washington, D.C. 20005 between 7:45 a.m. and 4:15 p.m. Comments should bear the identifying notation REG 24-02-1, and must be received on or before May 31, 1983.

Service Reopens 5-Year Review Comment Period

The Service initiated a review of plants and animals listed during 1977 under the Endangered Species Act of 1973 to insure the species' most current status is actually reflected by the Endangered or Threatened classification now assigned them (F.R. 9/27/82). The Service has received several requests to extend the comment period for this review and, therefore, has extended it from January 25, 1983, to May 4, 1983 (F.R. 2/3/83).

The September 27 notice lists those species under review and directs persons wishing to submit comments to the appropriate regional office of the Service. (Please see the October 1982 BULLETIN for this information.)

CITES NEWS—February 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Amendment Overrules Bobcat Decision

Criteria for the export of bobcat (*Lynx rufus*) under CITES were clarified by a recent amendment to the Endangered Species Act of 1973. The amendment to Section 8A of the Act, and the subsequent removal of a court injunction against bobcat exports, have allowed the Service to establish February 3, 1983, as the effective date for final findings to authorize the export of bobcats taken during the 1981-82 harvest season (F.R. 2/23/83).

Final findings, along with a final rule, on bobcat exports for the 1981-82 harvest season were published over 17 months ago (F.R. 10/14/81). The originally determined effective date for this rule, however, was suspended, pending the removal of an injunction by the U.S. District Court for the District of Columbia. The decision to vacate the injunction, which was removed on December 23, 1982, is now being appealed by Defenders of Wildlife.

The 1982 amendment to Section 8A of the Act overrules a 1981 court ruling which required population estimates by State wildlife agencies as part of the criteria for export of bobcat. The amendment states that export determinations and advice should be based on "the best available biological information derived from professionally accepted practices used in wildlife management..." It also states that population estimates are not required.

The Service reviewed its October 1981 findings and rule in terms of the new amendment, and determined that they are consistent with it. Both the findings and the rules became effective February 3, 1983.

Proposed 1982-83 Findings

Supplementary findings on the export of bobcats taken in the 1982-83 season, as well as comments on the Service's proposed guidelines used in making

such findings (F.R. 8/20/82), were published recently (F.R. 2/23/83). The Service will consider information and comments received by March 25, 1983, in making its final findings and rule. Correspondence concerning the February 23, 1983, notice should be sent to the Office of Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

The Service proposed to approve exports of bobcats harvested during the 1982-83 season in the following States and Indian Nations on the grounds that both Scientific Authority (SA) and Management Authority (MA) guidelines are met: Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Kansas, Klamath Tribe, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Navajo Nation, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

The Service also proposed not to grant general approval for exports of bobcats harvested in North Dakota. The Service presently lacks information that its SA guidelines are met in this State.

Aside from information submitted by State wildlife agencies, the only comments received in response to the August 20, 1982, notice were submitted by the law firm of Covington and Burlington on behalf of both Defenders of Wildlife and the Humane Society of the United States. These comments are summarized in the February 23, 1983, proposed rule.

NMFS Begins 5-Year Marine Species Review

The National Marine Fisheries Service has begun a status review on 19 marine species now listed for protection under the Endangered Species Act of 1973, as amended (F.R. 2/9/83). The Act requires that such a review of all species included in the List of Endangered and Threatened Wildlife and Plants be conducted at least once every 5 years.

To ensure that the reviews are complete and are based on the best available scientific and commercial data, NMFS is soliciting data, information, and comments concerning the biological status of these species from any interested party. Such submissions should be accompanied by: (1) The scientific and common names of the species involved;

Species Under Review

Fishes:

- Shortnose sturgeon
- Totoba (seatrout or weakfish)

Reptiles:

- Green sea turtle
- Hawksbill sea turtle
- Kemp's Ridley sea turtle
- Leatherback sea turtle
- Loggerhead sea turtle
- Olive Ridley sea turtle

Mammals:

- Carribean monk seal
- Hawaiian monk seal
- Mediterranean monk seal
- Blue whale
- Bowhead whale
- Fin whale (finback whale)
- Gray whale
- Humpback whale
- Right whale
- Sei whale
- Sperm whale

- Acipenser brevirostrum*
- Cynoscion macdonaldi*

- Chelonia mydas*
- Eretmochelys imbricata*
- Lepidochelys kempi*
- Dermochelys coriacea*
- Caretta caretta*
- Lepidochelys olivacea*

- Monachus tropicalis*
- Monachus schauinslandi*
- Monachus monachus*
- Balaenoptera musculus*
- Balaena mysticetus*
- Balaenoptera physalus*
- Eschrichtius robustus*
- Megaptera novaeangliae*
- Balaena glacialis*
- Balaenoptera borealis*
- Physeter catodon*

Continued on page 8

Only Known Ferret Population Receives Careful Attention

About a year and a half ago, the search for North America's rarest mammal finally met with success. A small, weasel-like animal was killed in September 1981 by a dog on a northwestern Wyoming ranch, and was taken to an alert taxidermist who recognized it as a black-footed ferret (*Mustela nigripes*). Today, a team of Federal, State, and university biologists, along with a State land board representative and a private landowner, is coordinating research and management on the only known ferret population in an effort to safeguard its existence and to locate any other populations.

The dead ferret was the first specimen found in recent years; in fact, some disappointed researchers had come to suspect that the species might be extinct. After the discovery, the carcass was turned over to the Ecology Section of the Service's Denver Wildlife Research Center (DWRC), which had been searching for ferrets in Wyoming since 1978. The Section assembled a group of scientists to conduct a detailed necropsy on the dead animal. Private researchers began surveying prairie dog towns in the vicinity of the find to map potential ferret habitat. At about the same time, Service and State representatives hosted a meeting at Meeteetse, Wyoming, near the site of the discovery,

to discuss the find with area ranchers, townspeople, private research consultants, and representatives of land managing agencies, and to solicit other ferret sightings. At that meeting, an employee of a local ranch reported seeing a black-footed ferret in a white-tailed prairie dog (*Cynomys leucurus*) town about 3 miles from where the dead ferret had been found. With the cooperation of the land-owner, the ranch hand led Wyoming Game and Fish Department, Bureau of Land Management (BLM), and Fish and Wildlife Service (FWS) biologists to the spot of the sighting. During a brief search of the area, some ferret sign was found but no live animals were seen.

A few days later, DWRC biologists Stephen Martin and Dennie Hammer were spotlighting for ferrets while driving back to the site when they saw the green eye-shine of a black-footed ferret at the side of the dirt road directly in front of them. After the animal dived into a nearby prairie dog hole, they approached and, at last, came face-to-face with a live individual of this elusive species. Quickly, they placed a tubular trap in the burrow opening and after an 11-hour wait, captured a young adult male ferret. The unharmed animal was taken to a veterinarian in Meeteetse where it was anesthetized, examined,

and fitted with a radio-collar. After its release the next day, the ferret was tracked for about 14 days. Most of the ferret's above-ground activity occurred at night, although some daytime movements were observed. After the radio failed, the ferret was retrapped for removal of the radio-collar. An examination of the animal revealed no ill effects from the experience.

Among the data gathered on the ferret during the initial phase of the DWRC study was information on periods of above-ground activity, distances moved, the number of times each prairie dog burrow was used for a den, and the total number of burrows used within an area of activity. Perhaps more important was the discovery of other ferrets in the area, proof that at least one population still exists.

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The black-footed ferret apparently never occurred in great numbers. Early records of the animal are scarce, due in part to the animal's nocturnal and secretive habits. Plains Indians were aware of the ferret, and used its skins during their ceremonies. The first recorded reference to the black-footed ferret was in 1851, when naturalists John James Audubon and Reverend John Bachman described it as a species from a single skin given to them by a Wyoming trapper.

The ferret's vast historical range corresponded with that of the prairie dog, and extended north across the short-grass prairie from Texas and Arizona to the Canadian provinces of Alberta and Saskatchewan. Ferrets have almost always been found only within prairie dog towns, since they rely on the rodents almost exclusively for prey and for burrows in which to live and raise their young. It was this close association with prairie dogs that led to the downfall of the ferret.

As the livestock industry grew in the late 1800's, the prairie dog came to be considered as a competitor with livestock for the limited forage. Intensive eradication programs were conducted throughout the Great Plains States from the 1920s through the 1960s, and subsequent control efforts have kept prairie dogs at relatively low numbers over most of their former range. In addition to reducing the ferret's food supply, prairie dog control efforts probably killed ferrets directly. The poison gases pumped into burrows were non-selective, and certain toxic chemicals in baited grain may have had secondary effects as they passed up through the food chain. Extensive plowing of the grasslands also decreased the habitat for both animals.

Although the prairie dog still occupies much of its former range, its numbers



The black-footed ferret is a slender, elongate carnivore well adapted to hunting its chief prey, the burrow-dwelling prairie dog. It is identified by its distinctive black mask, black feet, and black-tipped tail which contrast with its tan sides and back. The radio-collar placed on this ferret yielded valuable data on the animal's movements and behavior.

today are only a small fraction of those estimated for the late 1800's. The black-footed ferret undoubtedly declined sharply with the reduction and local eradication of the prairie dog. By the time the original Federal list of Endangered species was published in 1967, the ferret had long deserved inclusion. Before the Meeteetse discovery, the last confirmed sighting of a wild ferret was in 1979 in South Dakota. The only population formally studied was found in South Dakota in 1964. It was observed for about 10 years, but then it inexplicably disappeared. A few ferrets that had been taken to the Service's Patuxent Wildlife Research Center for captive breeding died from old age and disease (possibly resulting from genetic problems associated with inbreeding). Probable sightings are reported regularly from locations throughout much of the ferret's historical range; unfortunately, follow-up searches have been unsuccessful. Many of those searching for the elusive ferret held out hope that it might still exist, but the lack of firm evidence led to doubt in some others, and the Meeteetse find may have occurred just in time.

* * * * *

Fish and Wildlife Service research on the Meeteetse ferrets has continued since the first animal was captured, but at a cautious pace. Spotlight observations revealed that the ferrets usually were active four times in each 24 hours, for an average of just over an hour at a time. These activity periods were mostly nocturnal and crepuscular. To supplement the data on ferret movements gained by observation, the DWRC biologists were granted a permit by the State of Wyoming in spring 1982 to place radio-collars on six young-of-the-year ferrets. With the assistance of the independent ISU/Biota researchers, nineteen animals, some of them adults, were carefully trapped and examined during the summer 1982 field season, and the authorized number of young were collared. It was necessary to trap this number of ferrets to obtain the desired ratio of three males and three females. Because the collars allowed for growth, there were recurring problems with keeping them on the necks of the young animals. One ferret did retain its collar for 109 days, yielding valuable data on movement and behavior.

Independent Research

At about the same time the FWS was notified about the ferret discovery near Meeteetse, Dr. Tim Clark, an independent wildlife biologist with a long-time interest in the species, also was contacted. Clark, an adjunct professor at Idaho State University (ISU) and president of Biota Research and Consulting,

Inc., has been in search of the black-footed ferret since 1973, surveying prairie dog towns for ferret sign and gathering sighting reports. He spent most of each summer talking with various ranchers, conservationists, and biologists, and distributed "wanted" posters offering a reward for information leading to the discovery of a ferret in Wyoming. Eventually, after 8 years of leads and clues, the trail led to the ranch where the dead ferret was found in September 1981.

Immediately after the dead ferret was turned in, Clark and his colleague, Tom Campbell, were contacted by the landowner and began surveying the general area for prairie dog colonies. Beginning in December, teams of private researchers were brought in to a nearby ranch, where the DWRC had located the core population, to work through the winter. The ranch manager, who has been very interested in the well-being of the ferret, granted permission for access, and funding was contributed by a wide variety of conservation and scientific organizations. ISU/Biota's long-term study, which is still continuing, is designed in part to determine ferret distribution, evaluate survey techniques, and study the species' behavior and ecology.

Although the research results so far are preliminary, they do hold promise. In July 1982, the ISU/Biota teams estimated a population minimum of 59 ferrets, including 21 adults. These figures may change as survey techniques are refined, as research teams obtain better data, and as the population responds to programs to increase or

maintain this rare species. In addition, extensive records of various types of ferret sign found at the Meeteetse site will improve future survey techniques. For example, characteristic ferret diggings were photographed at intervals to record patterns of deterioration. This is expected to help in the recognition of diggings even when they are not fresh. Further, the researchers found a marked seasonality on the type, density, and persistence of certain ferret sign; winter was proven to be a good time to survey for ferret sign on white-tailed prairie dog towns. Clark, two of his colleagues, and DWRC Black-footed Ferret Project Leader Max Schroeder are now developing a handbook on ferret sign identification and survey techniques.

In their work outside the core population, the ISU/Biota teams have mapped 20 nearby prairie dog towns and have found ferrets up to 16 kilometers away. Throughout the area, most people have been very helpful by permitting access and providing information. The field work has been planned to respect the views of landowners as well as to minimize disturbance of the ferrets.

Clark reports that other projects currently underway include: ethological studies; development of a ferret bioenergetic model; analyses of ferret skeletal remains, salivary enzymes, scats, and hair; and a major effort to locate ferrets elsewhere.

Advisory Team

When the Meeteetse ferret population was first discovered, scientists interested in the elusive creature were quite



Ferrets digging in prairie dog burrows often leave behind trench-like tailings of loose dirt.

naturally elated. The find was considered extremely significant, and there was no shortage of suggestions on how to proceed with research and management. Concern developed that because of the unique situation, rediscovery of an extremely rare species, there might be a rush to develop a large-scale project that could jeopardize the vulnerable population. In order to coordinate activities at the site and restrict unnecessary disturbance to the animals, the Wyoming Game and Fish Department assumed the lead in the ferret program.

The Department then formed a Black-footed Ferret Advisory Team (BFAT) to: 1) coordinate research and management; 2) ensure that only high priority, sound research is conducted; and 3) ensure that its decisions would meet with agreement from the major land managers in the area. Among the BFAT members are representatives of the Wyoming Game and Fish Department, Wyoming State Land Board, University of Wyoming, FWS, BLM, U.S. Forest Service, and the landowner whose ranch contains most of the habitat occupied by the Meeteetse population. At this time, the BFAT is providing guidance to the Department on the Meeteetse ferrets, but eventually its efforts may be extended statewide. The team may be expanded to include representatives of any other landowners that might be affected by ferret management if other populations are found.

The ferret research that has been conducted thus far is of a preliminary nature, and it sets the stage for development of a comprehensive, long-term research and management program. One of the BFAT objectives is to obtain funding for this program. Financial assistance is being sought from Federal agencies, conservation and scientific organizations, and certain industries that are interested in the area. Using a \$30,000 FWS Section 6 Endangered Species grant, the Department recently hired Dave Belitsky to serve as the State's Black-footed Ferret Program Coordinator. His role includes: 1) integrating the individual research projects under an interim management plan, 2) seeking out new sources of funding, 3) determining important ferret habitat requirements, 4) serving as a contact for the public and the media on matters relating to the ferret in Wyoming, and 5) continuing the search for other ferret populations.

The Future

One problem facing the black-footed ferret continues to be its close association with the prairie dog. As prairie dog towns expand in some areas, there will be more requests for intensified control programs. The challenge will be to minimize the potential impacts of such

efforts on any ferrets that might be present. Improved surveys for ferret occurrence, application of toxicants that do not have secondary effects, and non-toxic control techniques are among the methods now being developed.

Perhaps a more serious factor to consider, especially with regard to the Meeteetse population, is oil and gas development. The area lies within the Overthrust Belt, a geological formation with rich energy potential. Some researchers have voiced concern that oil/gas exploration, drilling, and associated construction in the immediate vicinity of the ferret population could jeopardize the animals through disturbance (especially during the breeding season), burrow collapse, spills of toxic substances, and increases in road kills, among other factors. Consultations are underway between the FWS and BLM, in cooperation with the Minerals Management Service, to find alternatives that would avoid jeopardizing the population, and BLM is funding a study of the effects of seismic activity on prairie dog towns. The study is being conducted by the FWS Cooperative Wildlife Research Unit at the University of Wyoming.

The core population of the Meeteetse ferrets has the good fortune of living on a ranch whose owners over the years have maintained an active interest in both wildlife and range conservation. The large ranch was one of the last places in Wyoming to harbor wild bison, and it was influential in reestablishing pronghorn antelope herds from wild stock within its boundaries. The range managed by the ranch still supports both wildlife and livestock, and grazing lands are being maintained in good condition, proving that conservation and agriculture can be compatible. The current ranch manager, who has served as a leading member of the BFAT since its inception, is particularly concerned about the well-being of the ferret. A few oil wells were constructed on State lands managed by the ranch prior to discovery of the ferrets, but the ranch operators have deferred subsequent offers from seismic companies engaged in further oil and gas exploration for testing on prairie dog towns until research determines the best means of minimizing the potential adverse effects. This amounts to a voluntary commitment of tens of thousands of dollars in potential revenues toward conservation of ferrets on the ranch.

It is clear from the discovery at Meeteetse that man and ferrets can co-exist. The BFAT recognizes this fact and, on private land, the ranchers with ferrets on their property retain control. It has been speculated that some landowners have been reluctant to report ferret sightings because of concern that a government agency might condemn the property for a refuge or try to dictate ranch manage-

ment practices. Neither of these approaches is being considered by the FWS or State of Wyoming; instead, these agencies are seeking to work with affected landowners in a cooperative spirit. Any research and management activities would only be carried out with the landowners' approval. With good information, multiple use can often be integrated with management of a rare species so that neither is hurt.

As the result of a successful January 1983 meeting among State, FWS research staff, private interests, and oil/gas industry representatives, the companies interested in the Meeteetse area decided not to request permission for further drilling on the ferret site during 1983. Instead, they will spend this time drawing up a development plan that will outline their objectives for future years. Concurrently, Federal, State, and independent biologists will continue research into accommodating both energy production and wildlife conservation.

Recovery

The Wyoming Game and Fish Department, FWS, and BLM, with guidance from the BFAT, is developing a compre-



Fish and Wildlife Service biologist tracking radio-collared ferret near Meeteetse, Wyoming.

Photo by FWS, Denver Wildlife Research Center

hensive ferret research and management program using the Black-footed Ferret Recovery Plan as a base. Since the recovery plan was approved by the FWS in 1978, before the discovery of ferrets near Meeteetse, adjustments will be made as more knowledge is gained. The primary objective of the plan is: to "maintain at least one wild self-sustaining population of black-footed ferrets in each state within its former range." Obviously, a major part of the recovery effort will be to locate any other populations within the ferret's historical range that might still exist. Captive propagation and reestablishment of additional populations on secure habitat not used for agriculture are long-range possibilities that may be considered.

The information gained from the ferret research in Wyoming will be of great value in future surveys. Traditionally, ferrets were thought to be associated primarily with black-tailed prairie dog (*Cynomys ludovicianus*) towns, which are to the east of the white-tailed prairie dog range, and surveys were usually concentrated in these areas. But now that the Meeteetse discovery has reinforced the fact that ferrets can be found with white-tailed prairie dogs, biologists now have even more potential habitat in which to search for the ferret. With the improved techniques and new information on ferret behavior, it is likely that some previously surveyed habitat will be looked at again. In view of the ferret's secretive habits, the enormous size of its historical range, and the incompletely tested survey methods used in the past, it is possible that some populations could have escaped discovery. The limitations of spotlighting, one traditional technique, were illustrated when the DWRC team documented that a ferret can remain underground for at least 6

nights at a time. Development of scent attractants, chemical analysis of scats, improved training of dogs to detect ferret scent, or other new survey methods developed from observation of the Meeteetse ferrets could also help someday in the hunt for other populations. Dennie Hammer is now working under an FWS-funded program at the Cooperative Wildlife Research Unit, University of Wyoming, to test scent lures for attracting ferrets.

Fortunately, even though ferrets are not easy to detect, sightings are still being reported. From January 1981 through January 1983, the following numbers of probable or confirmed reports from areas outside Wyoming were received by the Service's Pierre, South Dakota, Endangered Species Office, which is keeping the records: South Dakota (12), Utah (3), Montana (2), Colorado (2), and Nebraska (1). Follow-up surveys are being conducted by State, Federal, and independent biologists as far as research budgets allow.

As the BULLETIN was going to press, the Service announced the first round of Fiscal Year 1983 State endangered species grants authorized under Section 6 of the Endangered Species Act. Grants for State projects on the ferret include: Montana, \$33,000 for ferret surveys and any subsequent population studies; Wyoming, \$30,000 for research and management; and Utah, \$12,000 for ferret surveys. These projects will complement the FWS-funded studies already being conducted by the DWRC in cooperation with other members of the BFAT.

REGIONAL BRIEFS

Continued from page 2

tat into which the k-rat will expand its range and population.

The CDFG approved the taking of all first California condor eggs (*Gymnogyps californianus*) eggs, as well as approving an additional bird for captive breeding and two additional birds for radio-telemetry (see January 1983 BULLETIN). SESO and regional staff representatives met with research specialists, the California Condor Recovery Team, CDFG, zoo officials, and other invited experts to discuss a proposed further acceleration of the condor capture and captive breeding effort. All generally agreed that an accelerated program, which would include the taking of eggs and nestlings in 1983, should be recommended to the Fish and Wildlife Service. This is the best option to ensure adequate genetic representation while still maintaining a wild population.

Permission was given by the California Game and Fish Commission on January 31, 1983, for taking first eggs of the season from any condor nest for artificial incubation. Accordingly, on February 23, a first egg was taken from the pair that lost two eggs last season from an accident during a domestic squabble and from predation by ravens, *Corvus corax* (see March and May 1982 editions of the BULLETIN). The egg was carried in an incubator suitcase and taken by helicopter to the San Diego Zoo for further incubation.

Condor #1, the first radio-tagged condor, has continued to spend most of its time in the western foothills of the southern Sierras. It is occasionally seen with other condors. SESO staff members met with U.S. Forest Service personnel to examine several timber sales in areas newly identified as condor habitat. The Forest Service was very receptive to modifying projects, as needed, to protect condor habitat.

Oregon Department of Fish and Wildlife inventories of the Bear Valley eagle roost in southern Oregon disclosed approximately 150 bald eagles (*Haliaeetus leucocephalus*) utilizing the roost site this winter. A Klamath Falls agent spent 2 days monitoring powerlines for carcasses of electrocuted eagles and other raptors in eagle concentration areas. An investigation was opened on a power company after the burned carcasses of a golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*) were found beneath two powerline poles. Another investigation was prompted by the discovery of two golden eagles found dead beneath a pole near Madras, Oregon. These carcasses have been shipped to the National Fish and Wildlife Health Labor-

WOOD STORK

Continued from page 1

Comments Solicited

Interested persons or organizations are requested to submit comments on this proposed rule to: Endangered Species Supervisor, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207. Comments must be received by April 29, 1983. Public hearing requests must be received by April 14, 1983.

A notice of review of the status of the U.S. breeding population of the wood stork was published earlier (F.R. 2/16/82). This notice solicited biological information on the status of the bird as well as information on activities which might be detrimental to the species or be affected by listing the bird or by designating its Critical Habitat.

NMFS

Continued from page 4

(2) Supporting documentation, such as maps, bibliographic references or reprints of pertinent publications; and (3) The sender's name, address, and any association, institution, or business that the party represents. This request is designed to obtain only data that have become available since the most recent rule-making concerning a listing action for each species being considered.

Comments, information, and data must be received by May 31, 1983, and should be sent to the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C. 20235. All submissions will be responded to in writing.

atory in Madison, Wisconsin, for necropsies. Death of an immature bald eagle found in a livestock yard near Klamath Falls is also being investigated.

Region 2—Human intrusion into a cave that serves as a hibernaculum for the Endangered Ozark big-eared bat (*Plecotus townsendii ingens*) was reported recently. The bats, which are especially vulnerable to disturbance during hibernation, comprise about 10 percent of Oklahoma's population of overwintering big-eareds. The Service has had difficulty preventing such disturbance activity because the cave is on private land, but it is attempting to initiate efforts aimed at negotiating a conservation easement.

The third season of razorback sucker (*Xyrauchen texanus*) spawning began recently at Dexter National Fish Hatchery. Over 2 million eggs have already been collected, and it appears that the region may be able to stock well over 3 million fry into historic Arizona stream habitat in 1983.

Representatives of Regions 2 and 6 met recently to discuss the Upper Colorado River Conservation Plan, Section 7 consultation coordination, and other matters of mutual interest. The need for a Lower Colorado River Conservation Plan, closer coordination of the San Juan River and black-footed ferret (*Mustela nigripes*) consultations, and other species-specific matters (whooping crane, *Grus americana*; woundfin, *Plagopterus argentissimus*; razorback sucker; etc.) were the main topics covered.

Region 3—Regional Office personnel met recently with representatives of several States and corporations to work toward a Conservation Agreement for the Illinois mud turtle (*Kinosternon flavescens spooneri*).

Indiana is in the process of applying for an Endangered Species Cooperative Agreement under Section 6 of the Endangered Species Act. The State already has several projects in mind for bald eagle reintroduction and cave protection. Indiana will probably contact other States to initiate some joint projects.

Region 4—The pygmy sculpin (*Cottus pygmaeus*) occurs only in Coldwater Spring and its outflow near Anniston, Alabama. This spring also serves as the primary water supply for the city of Anniston. Anniston uses approximately one-half the spring flow of over 30 million gallons per day.

In 1979, the Service reviewed the status of the pygmy sculpin in considering this species for listing. For various reasons, it was decided to protect this species through a Memorandum of Understanding (MOU) with the city of Anniston rather than to list it. The MOU

affords the pygmy sculpin protection because Anniston has control of Coldwater Spring and its watershed, and is interested in preserving the sculpin and its habitat.

Despite these good intentions, a near disaster struck the sculpin and Coldwater Spring on January 4, 1983. Water began to undermine the concrete spillway and resulted in a blowout that let the entire spring flow go under the dam. During the 12 hours it took to construct a temporary dam, the water level dropped approximately 18 inches, exposing some of the habitat. Undoubtedly, some fish were lost during the blowout and the temporary repairs. Within a few hours of repairs, the water level returned to within 6 inches of full pool with all the sculpin habitat restored.

Anniston is working to make permanent repairs to the dam, and is cooperating with the Service to ensure that the sculpin suffers the least possible impact during these repairs. Without the immediate efforts of the Anniston Water Board, it is likely Coldwater Spring would have drained to only the spring run. Such a loss of over half the pygmy sculpin habitat would likely have resulted in a similar loss of the species.

Region 5—A large number of peregrine falcons (*Falco peregrinus*) have been reported recently from Virginia. Most were sighted along the coast, although a few were inland. These are thought to be reintroduced birds, and it is anticipated that some might nest at the hacking/nesting towers that have been constructed as part of the recovery effort.

Region 6—The Laramie false sagebrush (*Sphaeromeria simplex*), a member of the Asteraceae family, is not a proposed or listed species, but it is a protected species thanks to the Monolith Portland Cement Company located south of Laramie, Wyoming. The company granted a Conservation Easement to The Nature Conservancy for the plant. The easement is the result of special efforts by Mr. Jim Briggs, Manager of Monolith Portland's Laramie Office; Mr. Robert Kiesling, Montana Big Sky Field Office, The Nature Conservancy, Helena, Montana; Mr. Robert Lichvar, Wyoming Natural Heritage Program, Cheyenne, Wyoming; and Dr. Jim Miller, U.S. Fish and Wildlife Service. The taxon is endemic to Wyoming and is currently represented by a single population occupying a specialized habitat. The plant grows on a limestone substrate, which may also contain gypsum, with shallow pockets of surface soil at the base of each plant. Several members of the genus *Sphaeromeria* are being surveyed for cancer inhibiting properties by professors at the University of Wyoming. Of the nine species of *Sphaerome-*

ria, three (including *S. simplex*) are candidates for future listing.

The June 1982 issue of the BULLETIN discussed the Colorado River Fishery Monitoring Program (CRFMP) begun in 1982 by the Service and Bureau of Reclamation. The study was designed to verify and build upon work completed in the 1979-81 Colorado River Fishery Project on the Colorado squawfish (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and bonytail chub (*Gila elegans*). The first annual report of the CRFMP has now been issued. It reports that major objectives pertain to the Colorado squawfish because the squawfish (1) has a wide distribution, (2) exhibits long movements, and (3) has very specific habitat requirements. If the requirements of the squawfish are met, the requirements of the other Endangered fish may also be met. Studies on the squawfish were limited to specific sections of the Colorado, Gunnison, Yampa, and Green Rivers. Thirty-three squawfish were implanted with radio transmitters, and one fish was implanted with an ultrasonic transmitter. A large amount of data were collected on the movements of these fish. Movements were monitored especially close during the spawning period, which resulted in a better understanding of the spawning behavior of squawfish and the location of a new spawning site in Gray Canyon on the Green River. Larval squawfish were collected in the Green, Yampa, and Colorado Rivers. Studies to determine the effect of flow fluctuation on river habitat and squawfish did not materialize as planned. This was because of high flows, along with flow release scheduling problems at Flaming Gorge Dam on the Green River. These studies will continue in 1983, and radio-telemetry studies will be initiated on humpback chubs in the Black Rocks area of the Colorado River.

The October 1981 and March 1982 issues of the BULLETIN reported the recovery of three black-footed ferret (*Mustela nigripes*) carcasses. Postmortem examinations have been completed on two carcasses. The first ferret was known to have been killed by dogs, but it has not been possible to determine cause of death of the second ferret. Chemical analyses of the stomach and intestinal contents did not reveal cause of death. The discovery of parasites previously not reported on ferrets and the development of background information on pathogenic organisms and chemical residues provides valuable information for future reference. Protocol for postmortem examinations and storage of tissue samples have been developed for ferrets so that there will be uniformity between examinations. The third carcass, a road kill, will be necropsied in the future. (See ferret feature in this issue of the BULLETIN.)

Eureka Valley Dunes Recovery Plan Approved

The Eureka Valley Dunes Recovery Plan, approved December 13, 1982, outlines a strategy for conserving and protecting two Endangered plants, the Eureka Valley dunegrass (*Swallenia alexandrae*) and the Eureka Valley evening-primrose (*Oenothera avita* ssp. *eurekensis*). These plants are endemic to the sand dune habitat of the Eureka Valley, and are found mainly in the massive dune system known as Eureka Dunes.

Eureka Valley is located in eastern Inyo County, California, effectively isolated by the Inyo Mountains to the north and west, the Saline Range to the south, and the Last Chance Mountains to the east. Except for a few parcels of State land, Eureka Valley is virtually all Federal land managed by the Bureau of Land Management (BLM). The dunes are located in the southeast portion of the valley, just north and west of Death Valley National Monument.

The Eureka Dunes are among the tallest dune systems in the United States. In addition to the excellent visual and scenic values, the dunes and adjacent dune borders comprise an extremely rich ecological unit supporting approximately 55 species of vascular plants, including the two federally listed plants and another endemic, the shining milk-vetch (*Astragalus lentiginosus* var. *micans*). The milk-vetch is under review for listing by the Service. The dunes and bordering mountain ranges also support an abundance of animals, including bighorn sheep, desert kit fox, kangaroo mice, pocket mice, kangaroo rats and several very unusual beetles, some of which are known only from the Eureka Dunes. Archeological sites around the periphery of the dunes provide evidence that humans have visited Eureka Valley from as early as the late Pleistocene.

Background

For many years, isolation and the absence of water protected the area and its endemic species. The trip into the valley was difficult, and visitors were, at first, extremely limited. Those who came were campers wanting solitude, photographers, and persons who engaged in other types of non-vehicular recreation. During the 1960's, however, the character and intensity of human use in the valley changed rapidly. The solitude and grandeur of the valley and high dune slopes also attracted off-road vehicle (ORV) enthusiasts. As ORV use on the dunes increased, non-vehicular use was displaced. As a consequence, in the early 1970's the Eureka Dune System and its sensitive resources became the center of much public controversy that revolved around the impacts of ORVs on the biota and physical features of the dunes. Public interest and involvement eventually led BLM to conduct an environmental study of the Eureka Dunes and in 1976 to recommend the dunes be closed to ORV recreation.

Recovery of the dune vegetation was dramatic following the ORV closure and good rains of November 1976. In time, however, it became evident that the closure was not being fully observed. Although it had been respected for the most part, violations became more and more frequent. The most flagrant violations occurred over Easter weekend in 1979 when several ORV "events" were held on the dunes. Public protests following this violation compelled BLM to erect and maintain the closure signs around the dunes. On Easter weekend in 1980 the BLM presence at Eureka dunes gave a clear message that the closure was to be enforced. ORV activity since that time has been relatively minor; how-

ever, camping along the perimeter of the dunes remains a problem that adversely impacts the dunegrass and evening-primrose.



Photo by Mary DeDecker

During favorable years, the sandy dune borders are covered with the white blooms of *Oenothera avita* ssp. *eurekensis*. Elsewhere the plants are more scattered but fairly frequent.

Recovery Plan

The primary objective of the Eureka Valley dunes recovery plan is to protect the existing dunegrass and evening-primrose populations from human threats and ensure that they remain vigorous and self-sustaining. The Service's plan does not call for transplantation, or sowing, or other methods of supplementing natural reproduction, but instead calls for strict control of vehicular traffic and excessive human intrusion. Also, the plan strongly emphasizes the need for adequate monitoring of the plants.

The high recreational value of the Eureka Dunes, and the southern Eureka Valley, are recognized in the plan. Consequently, recreational activities are accommodated insofar as they are compatible with maintaining the integrity of the ecosystem. The plan provides for camping away from the sensitive dune borders, slopes, and ecotones; for the



Photo by Peter G. Rowlands

The Eureka Dune System is approximately 3 miles long consisting of a massive 4 square mile triangular sand mountain 656 feet high, and a series of transverse dunes about a third as high covering 5 square miles.

establishment of a picnic/day use area at the northwest corner of the dunes; and for interpretive signs and displays. Increased law enforcement, especially during peak use times, as well as increased air patrols are an integral part of the recovery plan.

The plan presents the southern Eureka Valley as an ecological unit, and calls for the protection of its watershed and dependent biota. To protect this area it is necessary to confine or restrict all vehicular use to designated roads and trails. Activities that cause excessive erosion or significantly alter the watershed or hydrological regime within the valley should be carefully controlled. If it is not possible to minimize such impacts to insignificant levels, the activities should be prohibited.

In recent months, BLM's Ridgecrest Resource Area, (part of the California Desert District) has developed and approved "A Sikes Act Management Plan for the Eureka Valley Dunes Area of Critical Environmental Concern and the Eureka Dunes Wildlife Habitat Management Area." This plan, signed September 29, 1982, is much narrower in scope than the Service's document, including only the major dunes. Nonetheless, both plans have similar objectives and goals for the conservation of the Eureka Valley Dunes proper.

Eureka Valley dunegrass

The Eureka Valley dunegrass, discovered by Anne Alexander in 1949, is known from four populations, all in the southern Eureka Valley. The dunegrass forms large clumps on the dune slopes. The clumps enlarge and spread as sand



Photo by Mary DeDecker

Swallenia alexandrae is a perennial grass, known only from the shifting sand dunes of southern Eureka Valley, California. Although considered a primitive grass species, its origins and taxonomic affinities are obscure.

is stabilized over and around the stems. It also grows from seedlings; these young plants were probably more vulnerable to ORV activity. The dunegrass, a coarse perennial with flowering stems 1.5 to 10 dm tall, has stiff, lance-like leaves. The leaf blades are 2.5 to 12 cm long.

Eureka Valley evening-primrose

The principal habitat of the Eureka Valley evening-primrose is the shallow sand bordering the dunes. The evening-primrose was first collected by Phillip Munz and John Roos in 1954. The fragile white flowers of the evening-primrose are best observed in the evening and early morning when they are fresh and

fully open. Like the dunegrass, the evening-primrose is a perennial, well adapted to the unstable shifting sands of the dunes. It maintains itself by developing new rosettes (whorls of leaves) from the nodes of buried stems.

The Eureka Valley Dunes Recovery Plan was written under contract to the Service by Mary DeDecker of Independence, California.

For more information on the Eureka Valley Dunes Recovery Plan, contact the Portland Regional Director (see page 2 for address). Copies of this plan, and of all approved recovery plans, will be made available for purchase from the Fish and Wildlife Reference Service, Unit j, 3840 York Street, Denver, Colorado 80205-3536 (800/525-3426).



BLM Photos by Peter G. Rowlands

ORV tracks photographed February 1981 at the north end of the Eureka Dunes.

New Publications

Part I of the IUCN (International Union for Conservation of Nature and Natural Resources) Mammal Red Data Book and Part I of the Amphibia-Reptilia Red Data Book are now available. Both are fully revised 1982 editions produced by the IUCN Conservation Monitoring Centre in Cambridge, England.

Part I of the Mammal Red Data Book covers 155 threatened taxa in North and South America and Australasia, including representatives for all thirteen orders (excluding Cetacea) which inhabit these regions. Part I of the Amphibia-Reptilia volume covers 83 threatened taxa in the orders Rhynchocephalia, Crocodylia and Testudines, from all zoogeographic regions. The mammal volume comprises 560 pages and the Amphibia-Reptilia volume 480 pages; both are hardback bound.

Continued on page 12

Call for Papers

A workshop on management of non-game wildlife as species and as integral components of ecological communities will be held at the University of Kentucky, Lexington, Kentucky on June 11-12, 1984. The workshop is being sponsored by the Department of Forestry, University of Kentucky, in cooperation with the Kentucky Department of Fish and Wildlife Resources, Kentucky Nature Preserves Commission, TVA Land-Between-the-Lakes, the Daniel Boone National Forest, and the Kentucky Nature Conservancy. Subject areas to be included are: 1) inventory, including listing criteria and computerized retrieval systems; 2) management of nongame species, communities, and people; 3) monitoring methods to determine management effectiveness; and (4) current and future research. Individuals who wish to present a paper in one of the above areas should submit a 250-word abstract by October 15, 1983 to: Dr. William C. McComb, Department of Forestry, University of Kentucky, Lexington, Kentucky 40546-0073. Notification of acceptance will be made by January 15, 1984. Instructions to authors regarding format and deadlines for complete manuscripts will be provided at that time. A published proceedings of all accepted papers will follow the workshop.

New Publications

Continued from page 11

Further volumes in the Mammal and Amphibia-Reptilia series are in preparation as are editions covering invertebrates, birds and fish; all inquiries concerning these should be addressed

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	18
Birds	52	14	144	3	0	0	213	28
Reptiles	8	6	55	8	4	0	81	6
Amphibians	5	0	8	3	0	0	16	2
Fishes	29	4	11	12	0	0	56	20
Snails	3	0	1	5	0	0	9	1
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	6
TOTAL	199	44	444	48	7	24	766	85**

*Separate populations of a species, listed both as Endangered and Threatened are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of species currently proposed: 24 animals
6 plants

Number of Critical Habitats listed: 55

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 80

Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

February 28, 1983

to the Conservation Monitoring Centre.

Outside the Americas, books may be ordered directly from: IUCN Publications, Avenue du Mont-Blanc, 1196 Gland, Switzerland. Price per volume (including postage) payable with order: 11 pounds sterling (U.S.\$22.00 surface mail) or 13 pounds sterling (U.S.\$26 air mail). In the U.S.A., Canada, Latin America and the Caribbean, orders may be placed with: UNIPUB, Box 433, Murray Hill, New York, New York 10016. Price per volume (including postage) payable with order: U.S.\$21.00 plus any appropriate State tax. Orders may also be

placed through: IUCN Conservation Monitoring Centre, 219(c) Huntingdon Road, Cambridge CB3 0DL, England.

The Georgia "Proceedings of the Nongame and Endangered Wildlife Symposium" (August 13-14, 1981) is now available. Copies may be obtained by sending a self addressed, postage paid envelope (9 x 12) to the following address: Department of Natural Resources, Nongame/Endangered Wildlife Program, Game & Fish Division, Route 2, Box 119A, Social Circle, Georgia 30279. Postage rates: Individuals—\$0.86; Libraries—\$0.47.

March 1983

Vol. VIII No. 3

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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Technical Bulletin

 Department of Interior, U.S. Fish and Wildlife Service
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12 Foreign Mammals Proposed for Listing

The Service has proposed that 12 species of foreign mammals be listed as Endangered (F.R. 3/1/83). If approved, the rule would restrict most importation of these animals into the United States and allow cooperative research programs to be undertaken in their behalf.

- Rodriguez flying fox fruit bat (*Pteropus rodricensis*)—This bat occurs only on Rodriguez Island in the Indian Ocean, where less than 2 percent of its original habitat remains. Loss of the mixed natural vegetation needed to maintain its food sources, cyclone damage, and hunting by the local human population for food are the main threats to the species.

- Bulmer's flying fox fruit bat (*Aproteles bulmerae*)—After being known only from fossil remains dating back 9,000-12,000 years in central Papua New Guinea, a live specimen was taken by a native hunter in a mountain cave to the west in 1975. An intensive effort was made in 1977 to locate other individuals of the species, but a local hunter had already eliminated them from the cave where the first live bat was killed. Fruit bats are considered a delicacy in Papua New Guinea, and hunting has probably wiped out this species except perhaps in remote and sparsely inhabited areas in the western part of the country.

- ghost bat (*Macroderma gigas*)—Although this bat once occurred throughout much of Australia, it is now found only in the northern section. Populations are being destroyed by limestone quarrying and vandalism.

- bumblebee bat (*Craseonycteris thonglongyai*)—Found only at one location in western Thailand, this bat, which is one of the smallest mammals in the world (weighing about 2.5 grams), also is being jeopardized by habitat loss. The teak-bamboo forests in which it forages for insects have been largely destroyed by deforestation.

- Singapore roundleaf horseshoe bat (*Hipposideros ridleyi*)—This Malayan species has been taken only twice: once in Singapore in 1910, and once near Kuala Lumpur in 1975. It inhabits only lowland peat forests which occur in Malaya in only small, isolated patches. In recent years, this habitat has been

heavily logged, further reducing the bat's limited range.

- buff-headed marmoset (*Callithrix flaviceps*)—This small primate once occurred throughout the mountains of southeastern Brazil, but it currently survives in only reduced, fragmented populations. Formerly, the species was exploited for the pet trade and for biomedical research, but today the main threat is habitat destruction.

- Preuss's red colobus (*Colobus badius preussi*)—Today, this primate occurs only in the lowland evergreen forest of Cameroon. Its habitat has been degraded by logging, and it is commonly hunted as food.

- Vancouver Island marmot (*Marmota vancouverensis*)—This marmot occurs only in four areas of Vancouver Island, British Columbia, Canada. Its restricted habitat type—alpine and sub-alpine areas with steep slopes, talus debris, and open meadows—has been further reduced through development of ski resorts. Proposed developments would cause additional habitat damage, and logging is also having an adverse effect.

- Indus River dolphin (*Platanista indi*)—Entirely fresh-water in distribution, this cetacean is found only in a section of the Indus River and some of its tributaries in northern India. In former times, it was found throughout the Indus River system. The main threat to the species is aquatic habitat modification resulting from pollution and from large amounts of water being drawn for irrigation; hunting by humans for food is also a factor.

- African wild dog (*Lycaon pictus*)—Widely persecuted as a predator, this carnivore has been eliminated or reduced greatly in most parts of Africa. Although it receives some protection in scattered parks and reserves, elsewhere its habitat is being widely destroyed.

- giant panda (*Ailuropoda melanoleuca*)—The giant panda was once widely distributed over southern and eastern China, but massive habitat disruption eliminated the species from all but the most remote mountainous areas at an early date in Chinese history. Earthquakes are one danger; 138 pan-

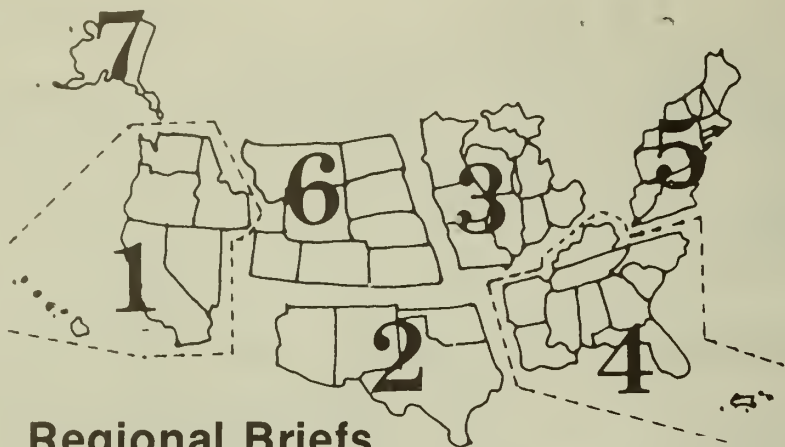
das died in earthquakes in 1975 and 1976. Another current threat is the sudden dying-out of arrow bamboo, the panda's main food. This plant flowers only once every 60-100 years, then dies. Some years are required for the seeds to grow into stands sufficient to support a panda population. In former times, before the habitat became so restricted, pandas could forage more widely for food and could find other sources. The current concern is that the panda population is at such a low level that the bamboo die-off could bring about the species' extinction.

- Pakistan sand cat (*Felis margarita scheffeli*)—Although this cat has always been rare, exploitation for the live animal trade, and for the skin trade, led to a drastic decline between 1968-1972. Since that time, it has been extremely difficult to find this cat in the wild. Any illegal trade could prove fatal to its survival. Even though it is now protected from exportation by Pakistan, the cat's rarity and small range make it highly vulnerable. There are no reserves or known breeding groups in captivity.

Continued on page 4



The giant panda is jeopardized by habitat disruption and the loss of its preferred food plant.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of March:

Region 1: During mid-January 1983, the California Department of Fish and Game (CDFG), in cooperation with the U.S. Fish and Wildlife Service (FWS) and the California Conservation Corps

(CCC), initiated removal of exotic iceplant (*Carpobrotus* spp. [= *Mesembryanthemum* spp.]) from the habitat of the Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*), a Federal and State listed endangered mammal. Crew members from the San Luis Obispo CCC office extracted an estimated 400+

cubic yards of iceplant from portions of the Morro Bay Ecological Reserve (a 50-acre area administered by CDFG to protect the kangaroo rat), and nearby Montana de Oro State Park. The iceplant removal is the first phase of a two-part program designed to restore habitat for the kangaroo rat.

Prior to and since acquisition of the State lands at Morro Bay, habitat conditions have deteriorated because the dune vegetation has become too dense. Although most of the remnant dune scrub vegetation occurring on State land is relatively natural (containing a high percentage of native species), the absence of fire, shifting sands, and/or other natural perturbations of the ecosystem have allowed the woody scrub vegetation to increase its coverage and density. As a result, Morro Bay kangaroo rats, which require relatively open habitat with small forbs and grasses, have slowly been eliminated. It is anticipated that removal of the iceplant, followed by selective removal of shrub vegetation, will provide appropriate habitat conditions for the kangaroo rats.

The Endangered Raptor Coordinator (ERC) of the Sacramento Endangered Species Office presented a paper on the American Peregrine Falcon Recovery Program at a conference on raptors at the California Academy of Sciences in San Francisco. The conference provided an excellent program on raptor conservation efforts. The ERC participated in a meeting of the California Raptor Research and Management Advisory Committee, where input was provided on the proposed Federal regulations to allow the sale of captive raised raptors. The Committee hopes that these regulations will provide a means for cost reimbursement to the captive breeder without creating a significant commercial trade in raptors.

On January 28, 24 light-footed clapper rails (*Rallus longirostris levipes*) were counted at Tijuana Slough, primarily adjacent to Imperial Beach Boulevard and Navy-owned land. The California least tern (*Sterna albigrons browni*) nesting enclosure south of the river mouth appears to have been swept clean of 90 percent of the debris which littered it last year. The terns prefer relatively clean sand with little or no vegetation.

A draft Conservation Agreement that addresses cooperative management for the Threatened Oregon silverspot butterfly (*Speyeria zerene hippolyta*) has been written. Cooperators include the U.S. Forest Service, The Nature Conservancy, Oregon Department of Transportation, and a private landowner.

In 1981, the Secretary of the Interior gave the Bureau of Reclamation the lead in reinitiating negotiations to settle Truckee-Carson water use conflicts. Representatives of the principal parties

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

The **ENDANGERED SPECIES TECHNICAL BULLETIN** is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Continued on page 7

Two Condor Chicks Hatched in Captivity

The first two California condor (*Gymnogyps californianus*) chicks to hatch in captivity have increased the hope that this critically Endangered species may yet be saved from extinction. Both chicks apparently are healthy and are responding to the special care they are receiving at the San Diego Wild Animal Park. The young birds were started on a gruel of water and finely chopped mice, which was later supplemented with regurgitated vulture food, similar to

what they would have received from their natural parents. Zookeepers are feeding the chicks with hand puppets that resemble the heads of adult condors to keep the birds from imprinting on humans. The sex of the two condor chicks will not be known for several months, but biologists hope that they will someday be part of a captive breeding group that will produce offspring for release into the wild.

The chicks hatched from eggs taken from two of the five known condor nests in the wild. Intensive observation of paired condors during the past breeding season provided conclusive proof that condors will lay a replacement egg if their first egg is lost. The California Game and Fish Commission granted the joint FWS/National Audubon Society condor research team permission to take the first egg from all condor nests (see January 1983 BULLETIN). On February 2, the breeding pair that lost two eggs last year during squabbles over incubation rights produced its first egg of this season; the egg was taken on February 23 by team biologists and transported to an incubation chamber at the San Diego Zoo. The chick emerged from its shell on March 30. (Although the troubled condor pair produced a second egg, disputes like those that occurred last year again erupted, and researchers took the egg on April 8 for artificial incubation as a precaution. However, the improper incubation it received from its natural parents during early embryonic development has probably damaged the egg's chances of hatching.) A second egg taken on March 8 from a different pair hatched in captivity on April 5. Both chicks have been transferred from the San Diego Zoo to the zoo's Wild Animal Park where they will be raised in a quarantined area near other captive vultures.

The two immature male condors taken into captivity last year after their chances for survival in the wild had come into question are now doing well at the Los Angeles Zoo.



This California condor chick, which hatched recently at the San Diego zoo, is being cared for by zookeepers using hand puppets that resemble the chick's natural parents.

CITES NEWS — March 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Foreign Proposals to Amend CITES Lists

Proposals to amend the CITES appendices submitted by Parties other than the United States were published by the Service (F.R. 3/7/83). U.S. proposals were announced earlier (F.R. 11/17/82 and F.R. 12/27/82), and featured in the December 1982 and January 1983 issues of the BULLETIN.

Besides listing the species proposed as subjects of amendments to the appendices, the March 7 notice also indicates the tentative negotiating positions of the U.S. delegation on the foreign proposals. Preliminary indications of support or opposition to the various

Continued on page 8

Service Proposes Reclassification of Arctic Peregrine Falcon

The Arctic peregrine falcon (*Falco peregrinus tundrius*) has been proposed by the Service for reclassification from Endangered to Threatened (F.R. 3/1/83). Included in the proposal is a Similarity of Appearance provision that would identify all peregrines in the 48 conterminous States as Endangered, regardless of their subspecific identity, in order to facilitate enforcement of conservation rules for the listed forms.

Status of the Peregrine

Three subspecies of the peregrine falcon are found in North America: the American peregrine (*F. p. anatum*); the Arctic peregrine (*F. p. tundrius*); and the Peale's peregrine (*F. p. pealei*), which nests from the Aleutian Islands east and south to Vancouver Island. The American and Arctic subspecies were listed as Endangered in 1970 after the discovery that contamination of their food supply by DDT and its metabolites interfered with reproduction, causing sharp reductions in population levels and nesting ranges. Habitat loss and taking by humans for falconry did occur, but environmental contamination was the main threat.

With the subsequent decline in DDT usage in the U.S. and Canada, the reproductive rate of falcon populations in the Arctic have shown a gradual improvement over the past 5-6 years, and are no longer faced with imminent extinction. Although the use of DDT continues where many of these birds apparently winter, recent blood samples have shown that less than 10 percent of the adult female peregrines migrating into the Arctic each spring have contamination levels sufficient to reduce natural

reproductive potential. Based on analyses of 430 blood samples from peregrines trapped during migration in the past 4 years, the other 90 percent should be capable of normal reproductive rates. These levels of contamination, while not threatening northern populations with extinction, do still pose a problem. Since the DDT contamination continues to occur and could even increase, the Service has not proposed the complete delisting of the Arctic peregrine at this time.

5-Year Review

Under the 1978 amendments to the Endangered Species Act, the status of all listed species must be reviewed at 5-year intervals to see if the classifications remain appropriate. Accordingly, the Service published in the May 21, 1979, *Federal Register* a Notice of Review on all species listed prior to 1975, including the two listed subspecies of North American peregrines. The March 1, 1983, proposed rule, however, is based on data received by the Service over the last several decades up until June 1982. After analysis of this information, the Service has concluded that *F. p. tundrius* is not now threatened with extinction throughout a significant portion of its range.

Effects of the Proposed Rule

As a Threatened species, *F. p. tundrius* and its habitat would continue to receive the protection authorized under the Endangered Species Act. Further, all peregrine falcons are covered under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and

the proposed rule would not affect the status of any peregrines under CITES. The Service has previously considered and rejected a petition to move *F. p. tundrius* to Appendix II. Existing Federal falconry regulations (50 CFR 21.28 and 21.29) would not be affected by the proposed rule, and no changes would be required in the regulations implementing the Migratory Bird Treaty Act.

The different subspecies of *Falco peregrinus* are difficult to distinguish, and they sometimes intergrade at the boundaries of their ranges. In the past, there has been debate about the taxonomic status of nesting peregrines along the Pacific Coast of the State of Washington: were they *F. p. pealei* (unlisted) or *F. p. anatum*? Therefore, the Service has also proposed to call all nesting peregrines in this area *F. p. anatum* for the purposes of the Act, thereby giving the birds and their habitat protection under both Sections 7 and 9. Further, the proposed rule would list all free flying peregrines in the 48 conterminous States, not otherwise identifiable as a listed subspecies, as Endangered under the Similarity of Appearance (S/A) clause of the Endangered Species Act. This is expected to make law enforcement more efficient, thereby increasing the protection to the listed peregrines. Under the S/A Endangered classification, all prohibitions on Endangered species would apply. Federal permits for prohibited activities could be approved only for 1) scientific research or 2) enhancement of propagation or survival of the species.

Public Comment Requested

The Service is requesting comments on the proposal from any interested agencies, organizations, and individuals. All comments should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240 by May 31, 1983.

12 Mammals

Continued from page 1

Effects of the Proposal

If the proposed rule becomes final, all prohibitions in 50 CFR 17.21 will apply, making it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale these species in interstate or foreign commerce. It would also be illegal to sell, deliver, carry, transport, or ship any such wildlife which was illegally taken.

Listing these mammals under the Endangered Species Act would benefit them in other ways. It would focus the

world's attention on their status, and encourage the resident countries to develop conservation programs. The U.S. could be authorized to make its expertise available, upon request, in developing such programs. Funding for conservation purposes could also be made available under certain circumstances.

Request for Information

Data and comments on the proposal are requested from all interested persons, organizations, and agencies worldwide. They should be received by the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240 by June 29, 1983.

Comment Period Reopened for Proposed Plant

The comment period for a proposal to list the San Francisco Peaks groundsel (*Senecio franciscanus*) as Threatened under the Endangered Species Act of 1973 and to determine its Critical Habitat has been reopened (F.R. 3/15/83). The plant was originally proposed for listing by the Service on November 22, 1982.

The Act, as amended, requires that a summary of any proposed listing regulation be published in a newspaper of general circulation in the areas in which the

Continued on page 6

Check-off Dollars Bolster Minnesota's Nongame Program

by Carrol L. Henderson
Nongame Wildlife Supervisor
Minnesota Department of Natural Resources

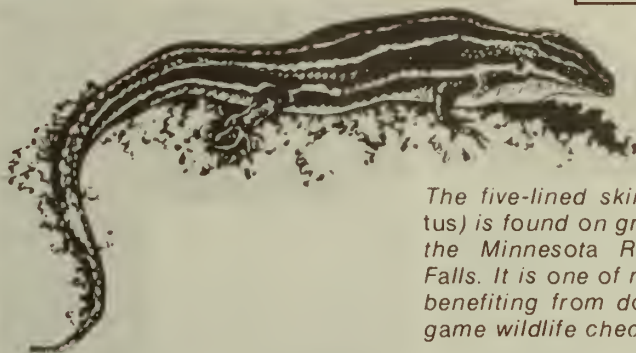
In 1980, Minnesota initiated an income tax check-off program, designed to raise funds for nongame wildlife conservation. During that year, the State received \$523,743.65—the largest amount received by any State in the first year of its program. Now, over 50 activities utilizing these funds are being conducted throughout the State.

The enthusiasm of Minnesotans for nongame conservation continues to increase as they see their donations converted into projects for wildlife. In the second year of the check-off, the number of donations increased from 170,000 to 197,000, and the total funds contributed rose to \$619,000.

Quite diverse projects have been made possible by the nongame check-off funding. Many surveys and studies on rare and uncommon nongame vertebrates have been accomplished through contracts with private individuals or with educational institutions; many other projects are being carried out by our own Nongame Wildlife Program staff members.

Since 1977, when our nongame program began, until last year, our staff consisted of one person. The check-off

Art by Dan Metz



The five-lined skink (*Eumeces fasciatus*) is found on granite outcrops along the Minnesota River near Redwood Falls. It is one of many wildlife species benefiting from donations to the nongame wildlife check-off.

funds, however, have enabled the State Department of Natural Resources (DNR) to hire six new employees. These new staff people are stationed at four regional offices and at the Nongame Wildlife Program headquarters in St. Paul.

Wildlife Projects

The projects conducted under contract to educational institutions include a landmark study by biologists from the University of Minnesota in Duluth. This study concerned the status and ecology of piping plovers (*Charadrius melodus*) in Lake of the Woods. The 12 nests found by the University of Minnesota team last summer comprise the largest colony remaining in the Great Lakes Region. Encroachment by humans, pets and motorized recreational vehicles on the sandy beaches where the piping plover nests threaten its survival. Fortunately, the area occupied by plovers in Lake of the Woods has recently become protected through designation as a Scientific and Natural Area. The information gathered by the team will be invaluable for planning future protection of this species. The piping plover is being considered for Federal protection under the Endangered Species Act.

A research project by a biologist from the University of North Dakota at Grand Forks focused on a geographically isolated population of five-lined skinks (*Eumeces fasciatus*) along the Minnesota River valley in west-central Minnesota. These rare lizards only occur on granite outcrops. The project revealed that their specialized habitat is being slowly eliminated by encroachment of eastern red cedars on the outcrops. Control of the cedars may be necessary to preserve the skinks.

Other research projects investigated the effects of the size of aspen clearcuts on nongame birds, the feeding ecology of trumpeter swan cygnets (*Cygnus buccinator*), the behavioral ecology of

bluejays (*Cyanocitta cristata*), and lead poisoning in bald eagles (*Haliaeetus leucocephalus*). The feasibility of placing great gray owl (*Strix nebulosa nebulosa*) nesting platforms in potential habitat to monitor the owl's population status was also studied. This spring, one pair of great gray owls has initiated nesting on one of the 24 platforms which were constructed. A survey of bats has also been started in southeastern Minnesota.

Many of the activities of the four regional nongame wildlife specialists who have been hired will involve habitat management work in coordination with County, State, and Federal natural resource managers and private citizens. Their responsibilities will also include wildlife surveys and educational efforts.

One of the specialists, for example, is working with plans developed by the Army Corps of Engineers to create a new dredge-spoil island in the Warroad harbor of Lake of the Woods. Landscaping of the island will be designed to accommodate nesting by common terns (*Sterna hirundo hirundo*), and piping plovers. Another specialist is coordinating efforts to bulldoze brush on the Hearing Island Wildlife Management Area (WMA) in the Duluth Harbor of Lake Superior. This work is also designed to create potential piping plover and common tern nesting habitat. This 37-acre island is the first WMA to be designated in Minnesota primarily for the benefit of nongame species. It is unique because it is also the only urban WMA in the State.

A novel approach for helping Eastern bluebirds (*Sialia sialis*) has been developed in cooperation with the Minnesota Department of Transportation (DOT). DOT and DNR employees have worked together to perfect a design whereby a large drill was used to create cavities in the tops of wooden fence posts along Interstate Highway rights-of-way. Our initial effort resulted in 9 bluebird pairs



The Endangered peregrine falcon (*Falco peregrinus anatum*) is being restored to Minnesota partially with donations to the nongame wildlife check-off. The Minnesota DNR is cooperating with other private and public organizations to help this important species.

and 70 tree swallow pairs in 93 posts.

Efforts are currently being completed to acquire 107-acre Shelley Island in Cotton Lake in Becker County. The island has a diversity of habitats and a history of use by nesting great blue herons (*Ardea herodias*), and red-necked grebes (*Podiceps grisegena*). The wildlife habitat value is increased by the presence of a 30-acre pond on the island and a sheltered bay containing wild rice. Indian burial sites also enhance the significance of the island. The Minnesota Chapter of The Nature Conservancy and the Minnesota Wildlife Heritage Foundation (MWHF) are cooperating in the preservation effort. The MWHF is raising \$25,000 toward the purchase price of \$75,000 and the Check-off Program is providing the balance.

Last summer, eight trumpeter swan eggs were obtained from the Lacreek National Wildlife Refuge in South Dakota and flown to incubator facilities at the DNR's Carlos Avery Wildlife Refuge. Five eggs were viable and hatched. The rearing of the five cygnets represents the first step in a project to reintroduce trumpeter swans to suitable habitat in outstate Minnesota. Additional releases are planned for the next 5 years.

Another exciting project last summer was the release of five peregrine falcon (*Falco peregrinus anatum*) chicks near Kellogg along the Mississippi River. This is a cooperative effort funded by donors of the Minnesota Chapter of The Nature Conservancy, the Peregrine Project of the Bell Museum of Natural History at the University of Minnesota, the U.S. Fish and Wildlife Service, and the Nongame Wildlife Check-off. Three chicks were successfully fledged, one was injured and will be released this year, and one was eaten by a great horned owl. Future plans call for up to 20 peregrine chicks to be released annually until the falcons are re-established on their historic nesting cliffs along the Mississippi River.

Information/Education Projects

New information and education efforts for the Nongame Wildlife Program included production of a semi-annual newsletter called "The Blazing Star." The newsletter is jointly produced with the Scientific and Natural Areas Program and Natural Heritage Program in the Section of Wildlife. Recently 1,000 aluminum "Loon Nesting Area" signs were printed for posting at public accesses on lakes where loons nest. The signs advise boaters not to approach loon nests, not to approach loon families, and that loons are protected by law. A poster has also been printed for distribution to trappers that should help prevent bald eagles and other birds of prey from being accidentally trapped. The poster advises trappers that open-bait



Pam Skoog, Regional Nongame Wildlife Specialist at Brainerd, Minnesota, is shown posting a "Loon Nesting Area" sign by the lake near Brainerd. She is one of four Regional Specialists recently hired to staff the Nongame Wildlife Program.

Department of Natural Resources Photo by Larry Duke

sets are illegal, and it tells them what to do if a bird of prey is accidentally caught. It also explains how to make an alternative trap set which does not attract birds of prey. A 30-second public service ad was also produced and distributed to radio stations in southwest Minnesota. It explained the importance of preserving roadside habitat.

A variety of administrative activities have occurred in the St. Paul DNR office which have had significant benefits for wildlife. Nongame staff members helped review a list of lands that were being made available free to the DNR by the Bureau of Land Management. Many of the parcels were islands with colonies of nongame birds like herring gulls and great blue herons. Other areas contained bald eagle nests. In all, over 1,055 parcels totaling more than 7,000 acres were transferred to the DNR in October 1982. Most will be administered as Wildlife Management Areas, and some will become Scientific and Natural Areas. The Nongame Program is also involved with development of a new list of State threatened and endangered species. The new list will be finalized in 1983 and will identify the wildlife species most in need of help through the Nongame Wildlife Program. Other activities have included data management for nongame distribution and abundance information, and review of environmental impact statements to minimize impacts of development projects on nongame wildlife.

Federal Cooperative Agreement

In 1979, Minnesota entered into a cooperative agreement with the Federal government under Section 6 of the Endangered Species Act of 1973. This

agreement provides matching funds for endangered species conservation projects. This year, the State will receive \$12,000 in matching funds for peregrine falcon work under this agreement. We will also receive additional Section 6 funds for timber wolf (*Canis lupus*) research.

Timber wolf management efforts are conducted by the Wildlife Section of DNR, but outside of the Nongame Wildlife Program. Minnesota wildlife law defines "game species" as animals either "traditionally or potentially harvested." Since the State has proposed a controlled harvest on the timber wolf, the wolf remains classified as a game species.

Comment Reopened

Continued from page 4

proposed species is believed to occur. Due to an inadvertent delay, this had not been accomplished by the end of the original comment period, January 21, 1983.

The Service will now promptly publish the newspaper notice and invite comments from any individuals that may be affected by the proposal. All comments must be received by May 16, 1983, the end of the second comment period. They should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

The San Francisco Peaks groundsel, a dwarf alpine plant, is known only from one small area in the mountains north of Flagstaff, Arizona. Its total known habitat is contained within the San Francisco Peaks region of Coconino National Forest.

Regional Briefs

Continued from page 2

to ongoing litigation (Pyramid Lake Paiute Tribe, Truckee-Carson Irrigation District, Carson-Truckee Water Conservancy District, State of Nevada, and Sierra Pacific Power Company) held several meetings to resolve their conflicts. No settlement has been reached to date.

Overshadowing water use negotiations by the Bureau of Reclamation are the water needs of cui-ui (*Chasmistes cujus*) and Lahontan cutthroat trout (*Salmo clarki henshawi*). Before water use conflicts can be equitably resolved, the amount and timing of water needed to restore and maintain river and lake habitat for these fish must be identified. At the Bureau's request, we have identified the minimum information we must have to accurately predict the preferred flow regime for these fish. In addition, we identified funding/staffing requirements to collect and analyze this information.

The Lahontan Cutthroat Trout (LCT) Workshop was held in Reno, Nevada, on February 1-2, 1983. The purpose of the workshop was to initiate development of a management plan for the western range of LCT populations, including a detailed action plan and schedule. The participants discussed individual drainages and populations, and identified priority actions necessary to safeguard and enhance populations in those drainages.

The workshop evolved from a December 1981 meeting in which the attendees agreed to an appropriate approach on the LCT's legal status and its recovery under the Endangered Species Act. A recovery plan will be completed that will improve the status of the species to the point that it will no longer need protection under the Act. With the recovery elements identified, specific guidance will be provided by two separate management plans covering particular situations of the fish in two different parts of its current range. One plan being prepared by the Nevada Department of Wildlife (NDOW) will address recovery in the Humboldt River drainage; the other will encompass primarily the Truckee, Carson, and Walker River drainages and will be cooperatively prepared by the NDOW and California Department of Fish and Game. In the Humboldt drainage, recovery will be achieved when the management plan is written and all parties agree on an implementation plan. Recovery of the species in the remainder of its distribution will be realized when all programs in the other management plan are implemented and considered successful. Once recovery in one or both parts of the species' range is accomplished, the Service can propose to have appropriate populations

delisted in accordance with provisions of the Endangered Species Act.

Region 2: Whooping cranes (*Grus americana*) are starting their annual migration northward. The world's population now stands at 114. Researchers will be radio-tracking up to three whooping cranes from the Wood Buffalo National Park-Aransas National Wildlife Refuge (NWR) flock. This will be the first spring migration so monitored. The previous fall radio-tracking effort has expanded our knowledge greatly. One item of note is that, in the past 24 months, four whooping cranes have died as a result of powerline collisions. Ida, a 1976 whooping crane of the Gray's Lake NWR-Bosque del Apache NWR flock died in mid-March after her wing was shattered, the result of a powerline strike in southern Colorado, and amputated. The bodies of two earlier powerline-killed whoopers were located because of their transmitters. The fourth was found along a roadside in Texas by a farmer.

The field survey of spotted bats (*Euderma maculatum*) is scheduled to start on May 1, 1983. This survey has been contracted to Dr. Brock Fenton, Carleton University, Ottawa, Canada. Dr. Fenton, Douglas Tenmount, and Joane Wysecki will conduct the survey of 20 separate sites at 82 areas within 12 States and a Canadian province. The survey crew will begin work at Big Bend National Park, Texas, advancing northward through the Western States and into Canada, expecting to return to Ontario on September 5.

On March 22, 1983, a mated pair of red wolves (*Canis rufus*) was air-freighted to the Texas Zoo at Victoria, Texas. These are the first red wolves to be returned to Texas. There are now 44 animals in the Red Wolf Captive Breeding Program, which is centered at Tacoma, Washington. With the addition of those at the Texas Zoo, 12 red wolves are now distributed among 5 facilities, such as zoos and wolf sanctuaries, separate from the breeding station at Tacoma.

The final 1983 stocking of razorback sucker (*Xyrauchen texanus*) fry in Arizona waters was made on March 16, bringing the total release for this year to over 2.5 million fry. Another stocking of 100,000 4-6 inch fingerlings is planned for autumn. The razorback sucker restocking program demonstrates what can be accomplished when State and Federal people work together toward a common goal. It also indicates the tremendous potential for species with high reproductive rates in the capable hands of biologists like those at Dexter National Fish Hatchery. The Memorandum of Understanding with the State of Arizona calls for restocking of razorback suckers annually through 1990.

Region 3: Regional staff members met recently with representatives of the Wis-

consin Department of Natural Resources and the National Park Service to initiate a project to determine why bald eagle (*Haliaeetus leucocephalus*) productivity at the Apostle Islands National Lakeshore (Lake Superior) is so low.

Region 4: The Asheville Endangered Species Field Office has begun a cooperative effort with the North Carolina Wildlife Resources Agency, the National Park Service, and the Tennessee Valley Authority to determine the incidence of great horned owls (*Bubo virginianus*) at potential peregrine falcon (*Falco peregrinus*) hacking sites. Present plans call for the hacking of some peregrines in 1984 and 1985.

Region 6: In February, the Montana Bald Eagle Working Group met in Missoula. The group (1) discussed the Pacific States Bald Eagle Recovery Plan, (2) reported that compilation of historic nest sites was going well, and (3) approved a proposed outline for Montana bald eagle management guidelines.

Representatives from the Service, Bureau of Land Management, Utah Division of Wildlife Resources, and the local community met in St. George, Utah, to discuss development of the Beaver Dam Slope Desert Tortoise Recovery Plan.

Several documents are being developed for the management and recovery of the black-footed ferret (*Mustela nigripes*). The Black-footed Ferret Recovery Team is revising the recovery plan. Region 6 is developing a strategy plan specific to the eight States within the Region, the Black-footed Ferret Advisory Team is preparing a management plan specific to the population near Meeteetse, Wyoming, and the Service's Division of Research is writing a Comprehensive Overall Research Plan that will outline the Service's approach to ferret research throughout its historic range.

The First Annual Report of the Windy Gap Fishes Study was published in January 1983. This work is in accordance with a Cooperative Agreement between the Service and Northern Colorado Water Conservancy District. Specific objectives of the work, which began in 1982, are (1) to locate and describe reproductive habitats for Colorado squawfish (*Ptychocheilus lucius*) and humpback chubs (*Gila cypha*) in the Grand Junction, Colorado, area, (2) to locate and quantify rearing areas for young Colorado squawfish and humpback chubs, (3) to identify the major factors that affect the survival of Colorado squawfish and humpback chubs during the first year of life, (4) to modify river backwaters and gravel pits, between Debeque Canyon and the mouth of the Green River, in a way that might enhance the survival of endangered fishes, (5) to evaluate natural and modi-

Continued on page 8

Foreign Proposals

Continued from page 3

fied river backwaters as habitat for proposals by the U.S. are based only on a review of information presented in the proposals in terms of criteria adopted by the Parties for the addition, deletion, or transfer of species in Appendices I and II. Final positions will be based on all available information and comments.

The following proposals, which are tentatively supported by the U.S. delegation, would transfer populations of Appendix I species to Appendix II in order to allow commercial international trade in ranched specimens: France's proposal to transfer the Tromelin and Europe islands population of *Chelonia mydas* (green sea turtle), Surinam's proposal to transfer the Surinam population of *Chelonia mydas*, Zimbabwe's proposal to transfer the Zimbabwe population of *Crocodylus niloticus* (Nile crocodile), and Australia's proposal to transfer *Crocodylus porosus* (saltwater crocodile). Ranching has been defined by the Parties to mean the rearing in a controlled environment of specimens taken from the wild. The Service also sought public comment on the ranching proposals by France and Surinam in relation to a special rule prohibiting the importation of maricultured green sea turtle products under the Endangered Species Act of 1973.

Regional Briefs

Continued from page 7

young Colorado squawfish and humpback chubs, and (6) to determine the extent that Colorado squawfish and humpback chubs move within the Colorado River and its tributaries. The report includes the findings from radio-

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	18
Birds	52	14	144	3	0	0	213	28
Reptiles	8	6	55	8	4	0	81	6
Amphibians	5	0	8	3	0	0	16	2
Fishes	29	4	11	12	0	0	56	20
Snails	3	0	1	5	0	0	9	1
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	7
TOTAL	199	44	444	48	7	24	766	86**

*Separate populations of a species, listed both as Endangered and Threatened are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of species currently proposed: 36 animals
6 plants

Number of Critical Habitats listed: 55

Number of Recovery Teams appointed: 69

Number of Recovery Plans approved: 80

Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

March 31, 1983

telemetry work, larval and young-of-the-year surveys, and backwater and gravel pit investigations. One of the more interesting occurrences was the movement of an instrumented squawfish that was near Gypsum Canyon, Utah, in early July; by September, it was 200 miles upriver in Colorado. The study will continue in 1983.

Region 7: The release of 291 captive-raised and wild, captive-held Aleutian Canada geese (*Branta canadensis leucopareia*) on Agattu Island in August 1982 marked the end of the Service's 20-year captive propagation effort for

this Endangered subspecies. Henceforth, efforts to reestablish breeding colonies will focus on transplanting wild adults and young from the Buldir Island breeding population. Although the Service is no longer propagating Aleutian geese for release into the wild, about 20 pairs have been placed on loan to zoos and private waterfowl breeders for display and propagation purposes. In 1982, these pairs produced 10 goslings. This growing captive flock is providing educational and scientific benefits as well as serving as a reservoir should they be needed for future release to the wild.

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Delisting Proposed for Three Kangaroo Species

The red kangaroo (*Macropus rufus*), eastern gray kangaroo (*M. giganteus*), and western gray kangaroo (*M. fuliginosus*), which are now listed as Threatened species under the Endangered Species Act have been proposed for delisting (F.R. 4/8/83). A separate proposal published the same day would permit the continued importation into the United States of kangaroo hides and products even if the delisting is not approved. Kangaroos survive in large numbers, are considered pests in many agricultural regions, and are managed under conservation plans developed by the Australian States.

Background

All three species were originally listed as Threatened in 1974, and importation of hides and products was prohibited at that time. These actions were taken because: 1) there was no clear evidence that the overall take was being properly monitored and regulated; 2) no reliable kangaroo population estimates were available from most of the Australian States; and 3) the Australian Government had itself banned kangaroo exports because of its uncertainty about the situation. The listing and ban on imports into the U.S. was intended to remain in effect until the Australian States developed adequate conservation plans and demonstrated that commercial trade in kangaroo products would not jeopardize the species as a whole.

On April 29, 1981, the Service published a *Federal Register* notice acknowledging that the Australian Government had met both criteria, and that improved censusing techniques had provided an estimate in excess of 32 million adult kangaroos in New South Wales, South Australia, Western Australia, and Queensland. Accordingly, the import ban was lifted for a trial period of at least 2 years, although the three species remained listed as Threatened. On November 10, 1982, the Australian Government petitioned the Service to allow the continued import into the U.S. of kangaroo products after the close of the 2-year trial period, and to remove all three species from the U.S. List of Threatened and Endangered Species. The accompanying data were judged

sufficient to propose these actions.

The kangaroos were not delisted in 1981 in conjunction with the lifting of the import ban because the Service had lingering concerns about: 1) the susceptibility of these animals to overexploitation; 2) the difficulty in predicting the severity of damage to the populations that could be caused by natural or human-related factors; and 3) the adequacy of law enforcement capability. In its petition to delist, the Australian Government provided substantial information that these concerns may no longer be valid. Use of improved population monitoring techniques, including aerial surveys, indicate that lifting the U.S. import ban in 1981 did not have any measurable detrimental effects on the overall status of the species.

In each State where they occur, the three species of kangaroos may be taken only by professional shooters who work under permits issued by the appropriate State wildlife agency in accordance with a conservation plan. Also, the Service has accepted the Australian Government's assurance that its States employ a sufficient number of enforcement agents. The rate of annual culling rarely exceeds 10 percent of the kangaroo population, and is considered well below the danger point for species like these kangaroos that are capable of continuous breeding throughout the year. Without the culling of excessive kangaroos by professional shooters, ranchers and farmers suffering eco-

nommic damage from these animals might resort to the drastic methods used in the past, such as the poisoning of water holes, which would have an obvious harmful effect on kangaroos and other wildlife. It should be emphasized that none of the Australian States manage their kangaroos on a sustained-yield basis for commercial profit. All of the funds derived from the sale of kangaroo products overseas are used to pay for the services of the professional shooters. If the States did not have this income, they would have to turn control of kangaroos over to the private ranchers and farmers.

Public Comment Requested

Although the 30-day public comment period on the proposal to allow continued importation into the U.S. of kangaroo products expired on May 9, comments on the delisting proposal from any interested agencies, organizations, and individuals will be accepted until June 7, 1983. All submissions, preferably in triplicate, should be addressed to the Associate Director—Federal Assistance, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

At the request of the Animal Protection Institute of America, the Service is holding a public hearing on this proposed rule on Monday, June 6, 1983, beginning at 9:00 AM. The public hearing will be held in Room 8068 Main Interior Department Building, 18th and C Streets, NW, Washington, D.C.



Photo by Amos Eno

Three kangaroo species now listed as Threatened are proposed for delisting.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of April:

Region 2—Ben Robertson was selected as manager of the new San Bernadino National Wildlife Refuge (NWR)

in southeast Arizona, and reported for duty in early April. His background in fisheries biology made him a natural choice for manager of the first NWR established especially for Endangered fishes. The refuge will help conserve six native fish species in the Rio Yaqui system within Arizona and Mexico.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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The Kemp's ridley sea turtle (*Lepidochelys kempii*) project, which is being carried out with the Mexico Secretariat of Fisheries, began April 12, and will continue through the nesting and hatching season (until August). The imprinting of hatchlings at Padre Island National Seashore by the National Park Service and headstarting of young turtles at the National Marine Fisheries Service lab in Galveston, Texas, will proceed.

The first litter of second generation Mexican wolves (*Canis lupus baileyi*) born in captivity was whelped on April 21 at the Rio Grande Zoo in Albuquerque. The litter was examined at 5 days of age, and consisted of five males and one female. It is anticipated that two more litters may be born at the other cooperating facilities in May.

Meanwhile, the first red wolves (*Canis rufus*) born in a public display facility were whelped at New Orleans' Audubon Park and Zoological Gardens on April 19. The litter's parents were both raised at the Red Wolf Recovery Program breeding facility near Tacoma, Washington, and shipped south in fall 1980. The successful breeding in 1983 is partially attributed to minor pen modifications made last year in an effort to make the wolves more comfortable in a public viewing situation.

Region 4—The ongoing review of the Ozark cavefish (*Amblyopsis rosae*) has found this species in 13 caves in 6 counties within the States of Arkansas, Missouri, and Oklahoma. The largest known population was surveyed, resulting in an estimate of 300 individuals in this cave. That cave population probably represented 60 percent of the total *A. rosae* population. The number of historic cave locations for the Ozark cavefish has been reduced by 40 percent, according to our current data, with most of the loss in Missouri. The remaining populations of *A. rosae* in Missouri are small, with never more than four cavefish observed in a cave when they are seen at all.

A very unusual discovery of a dead bald eagle (*Haliaeetus leucocephalus*) in an active nest near Lake Tohopekaliga was made by Florida eagle researcher and rehabilitator Doris Magor during an aerial survey in early March. With the help of the AAA Tree Service, Magor and FWS Special Agent Vance Eaddy recovered the carcass and submitted it for necropsy. The results revealed that the bird, an adult female carrying an egg, had suffered peritonitis and a gunshot wound to the head. Equally unusual was their observation that the dead bird's mate had apparently already acquired a new mate before the dead bird was removed. An egg found in the nest was left in the hope that the pair would incubate it. Although the newly

Continued on page 3

Regional Briefs

Continued from page 2

formed pair remained at the site, the egg eventually disappeared, and then a serious fire burned the tract around the tree. Fortunately, the nest tree itself was undamaged, and hopes are high for a successful nesting next season. Local media have covered the story closely, and a substantial reward fund had developed for information on the shooting, including voluntary donations by a local developer and a retiree in Maryland. FWS and Florida Game and Fresh Water Fish Commission agents are still hoping for new leads in the case.

Region 5—Pete Poulos, on temporary detail from the Washington Office to Region 5, has completed a preliminary draft recovery plan for the small whorled pogonia (*Isotria medeoloides*).

Peregrine falcons (*Falco peregrinus*) are nesting this year in New York, New Jersey, and Virginia. It is possible that peregrines are nesting also in New Hampshire.

The Chittenango Ovate Amber Snail Recovery Plan, which was completed by New York State biologists, has been signed by the Director. Recovery plans have been completed for the following species and are ready for Regional Director approval: flat-spined, three-toothed snail (*Triodopsis platysayoides*); Virginia fringed mountain snail (*Polygyriscus virginianus*); and Delmarva Fox Squirrel Recovery Plan (first revision).

Eaglets (*Haliaeetus leucocephalus*) from the Patuxent Wildlife Research Center have been placed successfully in active nests in New York, New Jersey, and Pennsylvania this spring. Eagles nesting at Bombay Hook (Delaware) NWR hatched their own young this year for the first time in 7 years.

Region 6—A Bald Eagle Management Plan for the Greater Yellowstone Ecosystem (GYE) has been drafted by the GYE Bald Eagle Working Team. The plan is not meant to replace the Pacific States Bald Eagle Recovery Plan, but rather to identify specific threats to the GYE bald eagle population and provide management recommendations at a detailed level.

Specifically, the plan summarizes data on population characteristics, life history, and habitat requirements, outlines population objectives, problems and strategies, as well as management recommendations; establishes priorities for research and management; and sets interim guidelines for nest site management.

The GYE includes habitat in portions of Wyoming, Idaho, and Montana. Over 8 governmental agencies with 20 administrative divisions are currently involved with research or management of the GYE bald eagle population. The GYE Bald Eagle Working Team was formed in December 1981 to aid in coordinating research and management of the population and thus turn a formerly fragmented approach into an effective program. The team includes representatives from the National Park Service, Wyoming Game and Fish Department, Idaho Fish and Game Department, Montana Department of Fish, Wildlife and Parks, the U.S. Forest Service, U.S. Fish and Wildlife Service, Montana State University, and the Bureau of Land Management.

The Interim Management Guidelines Committee appointed by the Black-footed Ferret Advisory Team (see February 1983 issue of the BULLETIN) met in January to begin drafting guidelines to manage black-footed ferrets (*Mustela nigripes*) near Meeteetse, Wyoming. Representatives from four oil/energy companies attended and agreed to develop a comprehensive long-term development plan for the Rose Creek Oil

Field that is in the area inhabited by ferrets.

The Black-footed Ferret Advisory Team (BFAT) held a 1-day meeting in March. The Wyoming Game and Fish Department (WGFD) announced that it is developing an operational protocol to be followed by researchers, photographers, or other parties working in areas inhabited by ferrets. Draft Interim Management Guidelines were reviewed. That evening, a town meeting was held to update the public on ferret research and management activities. Jack Turnell, manager of a ranch near Meeteetse, was presented with a plaque by the WGFD for his cooperation in efforts to conserve the black-footed ferret. Don Dexter, Director of WGFC, presented a diorama of a ferret in its native habitat to the Meeteetse community. The following day, Husky Oil Company gave BFAT members a tour of drilling and treater facilities so they could better understand the activities associated with oil field development and oil production. Husky Oil Company has voluntarily "shut-in" wells, for a period of 1 year, in areas inhabited by ferrets.

Region 7—Aleutian Islands NWR manager and Aleutian Canada Goose Recovery Team leader, Fred Zeille-maker, reports that six Aleutian Canada geese (*Branta canadensis leucopareia*), including one color-banded bird, were observed near Clam Lagoon, Adak Island, on March 16. Prior to this record, the earliest known spring arrival was April 25. This sighting makes for interesting speculation as weekly counts of the Aleutian Canada geese in California indicate that some of the geese may have departed their wintering grounds early. It is also possible that some geese may have wintered in the Aleutians or elsewhere in Alaska. Yet, with record snowfalls and accumulations at Adak and possibly throughout the Aleutians, it is unknown how the geese could have survived there through the winter.

CITES NEWS — May 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Bobcat Findings Announced

Final findings on the export of bobcats (*Lynx rufus*) harvested during the 1982-83 season were approved and announced by the Service (F.R. 4/18/83). The findings and the guidelines upon which they are based became effective on April 25, 1983.

Export was approved from the following States and Indian Nations on the grounds that both Scientific Authority and Management Authority guidelines are met: Alabama, Arizona, Arkansas,

Continued on page 7

Listing and Recovery Priorities Proposed in Draft Guidelines

Draft guidelines have been proposed to determine priorities for species to be listed as Endangered or Threatened under the Endangered Species Act, and for development and implementation of recovery plans for species already listed under the Act (F.R. 4/19/83). Comments from the public are requested and must be received by June 20, 1983.

Background

In 1979, a report to Congress by the General Accounting Office (GAO) recommended that the Service officially adopt a listing priority system based primarily on consideration of degree of threat faced by the species. Later, the 1979 Amendments to the Endangered Species Act required that guidelines be established and published in the *Federal Register*. Guidelines were adopted by the Service in 1980, but not published in the *Federal Register*. This system was subsequently revised in 1981 so that priority for listing would be assigned within a given category of degree of threat so as to generally favor vertebrate animals ("higher life forms").

The 1982 Amendments to the Endangered Species Act retained the requirement that guidelines be published. The 1982 amendments, however, necessitate the revision of the present system, since they specifically prohibit adoption of any system that would give consideration to whether species were "higher or lower life forms." The April 9, 1983, proposal is intended to satisfy the requirements of the 1982 legislation.

Although the Service strongly encouraged the development of recovery plans, the preparation of recovery plans was elective until passage of the 1978 Amendments to the Endangered Species Act. This legislation required the development of a recovery plan for every listed species, unless such a plan would not promote the conservation of the species.

During fiscal year 1977, the Service developed a draft recovery priority system to be used as a guide for recovery planning and resource allocation. The 1979 GAO report recommended that this draft system be approved and implemented, and this system was adopted by the Service in 1980. It was subsequently revised to give priority to "higher life forms" as in the 1981 listing priority system. The recovery priority system now proposed deletes this preference for "higher life forms" and adds a new criterion on conflict, required by the 1982 amendments.

Listing Guidelines

Three criteria are used in the proposed guidelines to establish 12 priority

categories for species to be listed or reclassified from Threatened to Endangered as follows:

Priorities for Listing or Reclassification From Threatened to Endangered

Threat			
Degree	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies	3
	Potential	Monotypic genus	4
		Species	5
		Subspecies	6
Low to moderate	Imminent	Monotypic genus	7
		Species	8
		Subspecies	9
	Potential	Monotypic genus	10
		Species	11
		Subspecies	12

The first proposed criterion is the degree of threat. Species facing the greatest threats to their continued existence would receive highest listing priority. The second criterion, immediacy of threat, is intended to assure that species facing actual, identifiable threats be given priority over those having only potential threats. The third criterion is intended to assign resources on a priority basis to those species representing highly distinctive or isolated gene pools, as reflected by the taxonomic level at which they are recognized. (The more isolated or distinctive a gene pool, the greater contribution its conservation is likely to make to the maintenance of ecosystem diversity.)

In accordance with Section 4(c)(2) of the Act, the Service currently reviews listed species every 5 years to identify any that might qualify for removal or reclassification. The proposed guidelines would employ two criteria to establish six priority categories for deleting or reclassifying species from Endangered to Threatened when evidence is available to warrant such actions.

Priorities for Delisting and Reclassification From Endangered to Threatened

Management Impact	Petition Status	Priority
High	Petitioned action	1
	Unpetitioned action	2
Moderate	Petitioned action	3
	Unpetitioned action	4
Low	Petitioned action	5
	Unpetitioned action	6

Priority considerations would concern whether or not protection under the Act is any longer necessary and whether the listing causes an unwarranted management burden or unnecessarily restricts human activities. (Inaccurate listing could divert resources from more appropriate activities.) Secondly, the system takes into account whether or not the Service has been petitioned to remove the species from the list or reclassify it. This consideration is also intended to give highest priority to species whose delisting is likely to remove the greatest impacts on known activities inasmuch as such species would also be likely to be subjects of petitions. The decision regarding whether a species will be retained on the lists or in the Endangered category, however, must be based on the considerations contained in Section 4(a)(1) of the Act and 50 CFR 424.11.

Recovery Guidelines

The proposed recovery guidelines use four criteria to establish 18 priority categories as follows:

Recovery Priority

Degree of Threat	Recovery potential	Taxonomy	Priority	Conflict
High	High	Monotypic genus	1	1C.
		Species	2	2C.
		Subspecies	3	3C.
	Low	Monotypic genus	4	4C.
		Species	5	5C.
		Subspecies	6	6C.
	Moderate	Monotypic genus	7	7C.
		Species	8	8C.
		Subspecies	9	9C.
	Low	Monotypic genus	10	10C.
		Species	11	11C.
		Subspecies	12	12C.
Low	High	Monotypic genus	13	13C.
		Species	14	14C.
		Subspecies	15	15C.
	Low	Monotypic genus	16	16C.
		Species	17	17C.
		Subspecies	18	18C.

Continued on page 7

Disease Threatens Tree; Endangered Status Proposed

An evergreen tree, *Torreya taxifolia* (Florida torreya), which is endemic to the Apalachicola River area in Florida and Georgia, was proposed as Endangered by the Service (F.R. 4/7/83). The primary threat to this species is a fungal disease, although past habitat reductions have occurred.

A conifer reaching 18 meters tall, *Torreya taxifolia* was first discovered in 1835 and formally described in 1838 (Arnott, 1838). This species and other endemics of the Apalachicola River system have received much attention from scientists and local residents. The entire Apalachicola River bluff system today is an extremely diverse and unique ecosystem.

Torreya taxifolia has whorled branches and stiff, sharp-pointed, needle-like leaves. The trees are conical in nature. The leaves of the tree have a pungent or resinous odor when crushed, thus one common name, "stinking cedar." A similar coniferous species of the same plant family (Taxaceae), *Taxus floridanus* (Florida yew), also occurs in the Apalachicola River area. This small tree, which is easily distinguished from *Torreya taxifolia*, was also initially recommended for listing as Endangered, under the Endangered Species Act; recent studies (1982), however, indicate it is presently less vulnerable than previously thought.

Background

Actions leading to Federal protection for the Florida torreya began in 1973 with the inclusion of plants in the Act. Section 12 of the 1973 Act directed the Smithsonian Institution to compile a report on Endangered, Threatened, and extinct plant species. The resulting 1975 report included *Torreya taxifolia*; it was treated as a petition by the Service, and published as a notice of review on July 1, 1975. This action was followed on June 16, 1976, by a proposal to list a number of plants, including *Torreya taxifolia*.

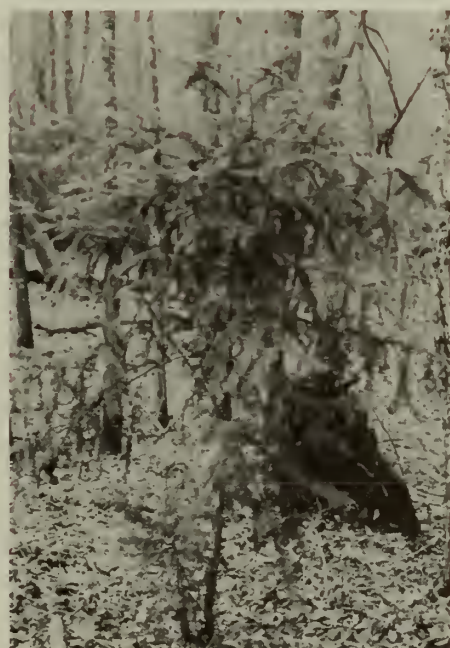
Due to subsequent requirements of the 1978 Amendments to the Endangered Species Act, the 1976 proposal was withdrawn. The plant has now been repropoed based on sufficient new information. A 1981 report submitted by the Georgia Plant Program, investigations carried out by Service botanists during the winter of 1981, and a contract completed during 1982 on *Torreya taxifolia* and *Taxus floridana* have provided significant new data.

Since 1962, natural populations of *Torreya taxifolia* have been drastically

reduced or eliminated due to a fungal disease. The disease causes necrosis of the needles and stems and severe defoliation. Treatment through the application of fungicides seems possible; however, extensive research is needed to determine appropriate treatments and to investigate the possibility of breeding trees resistant to the disease. All that remains in nature are root sprouts, reaching less than 3 meters in height. Cultivated, unaffected specimens that exist in various botanical gardens can provide seeds and material for future recovery efforts.

Torreya taxifolia occurs in the ravines along the eastern side of the Apalachicola River from Lake Seminole in Georgia to Bristol, Florida. One population also occurs on the margin of Dog Pond (Florida) that lies to the west of the Apalachicola River. The Georgia population occurs entirely on public land administered by the U.S. Army Corps of Engineers (ACE). The ACE resource manager of this area is sensitive to the need for proper management and protection of the species. Management and protection efforts must continue and should not conflict with the present recreational use of the area.

The Florida populations occur on a State park, a city park, and privately owned lands. Both the State and city parks provide some protected habitat



A root sprout of *Torreya taxifolia*, the Florida torreya. All mature, viable trees are located in botanical gardens and arboreta.

for the species; the majority of the area occupied by the tree, however, is in private ownership where no protective provisions exist. An ACE planned impoundment near Blountstown, Florida, is not expected to affect this species; however, proper planning for the protection of this species will need to be part of all ACE and any other future Federal projects.

Torreya taxifolia is already protected by Florida Law, Chapter 65-426, Section 865.06, and by the Georgia Wild Flower Preservation Act of 1973. The Endangered Species Act would offer additional protection through the recovery process and interstate and international trade prohibitions.

Since all mature viable trees are located in botanical gardens and arboreta, the Service has decided that it would not be prudent to determine Critical Habitat for *Torreya taxifolia* at this time. After the disease has been overcome, recovery efforts would address reintroduction of the species into the wild, and Critical Habitat could be determined then, if found prudent to do so.

If made final, this rule will require Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species. The regulations pertaining to Endangered plants are found at 50 CFR 17.61. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (703/235-1903).

Comments or suggestions from the public, concerned governmental agencies, the scientific community, industry, private interests, or any other interested party concerning any aspect of this proposed rule are requested. They should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207. Comments from all interested parties must be received by June 6, 1983. The deadline for public hearing requests was May 23, 1983.

Comment Period Reopened On Ash Meadows Rule

The comment period on a proposal of Endangered status and Critical Habitat for the Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) and the Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*) was reopened by the Service (F.R. 5/6/83). The same rule announced a public hear-

Continued on page 8

San Joaquin Kit Fox Recovery Plan Approved

The San Joaquin kit fox (*Vulpes macrotis mutica*) is a small, nocturnal carnivore that inhabits semi-arid grasslands of the San Joaquin Valley, California. Adult fox stand at about 10 to 12 inches at the shoulder and weight about 5 pounds. Conspicuous traits include large ears, covered on the inner side by dense, white hairs, and a long cylindrical tail that is light-buff to buffy gray in color with a black tip.

Historically the San Joaquin kit fox was a common resident in the dry plains

of the San Joaquin Valley, from as far north as Tracy, San Joaquin County, on the west side of the valley, and near La Grange, Stanislaus County, on the east side of the valley, south to Kern County. Starting in the early 1900's, however, agricultural, industrial, and urban developments brought about rapidly increasing rates of habitat loss that led to population declines.

The greatest known threat to the San Joaquin kit fox is loss of habitat. Other factors which contribute to its decline

are pest control programs, shooting, trapping, road kills, and offroad vehicles.

The San Joaquin kit fox is listed as Endangered under the Endangered Species Act of 1973, as amended, and is also protected as a "rare" species under the California Endangered Species Act of 1970. The Service approved the San Joaquin Kit Fox Recovery Plan on January 31, 1983.

The recovery plan proposes a program that, when implemented, will halt the decline in populations and ultimately lead to reclassification from Endangered to Threatened, and possibly to eventual delisting of the subspecies. Since little is known about the population size or habitat necessary for delisting, the plan places high priority on studies to determine these variables.

In general, the plan is based on several overall premises regarding current use and ownership of the land as well as known current distribution of the kit fox. Realistic goals are established that incorporate a blend of actions that emphasize management and restoration of existing public lands in addition to specific protection or acquisition of some areas.

The San Joaquin Valley is one of the most important world centers for both agriculture and petroleum development, making both the surface and subsurface potential of almost any parcel of land quite valuable economically. To propose curtailment of development or the purchase of large blocks of land for the conservation of the kit fox would be unrealistic.

It is believed that suitable populations of San Joaquin kit fox can coexist with some activities, such as oil and gas development, provided coordination and cooperation exists between developers and regulatory agencies. The limited information on adaptability of the species indicates that kit fox are compatible with moderate, well regulated petroleum activities, and controlled grazing as long as consideration

Continued on page 7



San Joaquin kit fox (*Vulpes macrotis mutica*) have an average body length of 20 inches and stand between 10 and 12 inches at the shoulder.



Proposed zonation of San Joaquin kit fox range for use in apportioning Recovery Plan efforts and funds. Zone 1 (crosshatched) to receive greatest efforts, Zone 2 (hatched) intermediate efforts, and Zone 3 (open) modest effort.

Copies of this plan, and of all approved recovery plans, will be made available for purchase from the Fish and Wildlife Reference Service, Unit j, 3840 York Street, Denver, Colorado 80205-3536 (800/525-3426). A 4-to-6 month printing time must be allowed following the date a recovery plan is approved by the Director, before copies may be available. A delay should be expected when ordering newly approved plans.

Continued from page 6

is given to minimizing habitat destruction and loss of prey and denning sites.

Sufficient Federal legislation exists already to support the involvement of several agencies in efforts to aid recovery of the subspecies; no new legislation will be needed. What will be required to implement the recovery plan is the active involvement of several Federal and State agencies in a cooperative effort.

The plan recommends that the known range of the kit fox be divided into three zones and that efforts to implement the plan be greatest in Zone 1, intermediate in Zone 2, and modest in Zone 3 (See accompanying map). The zones have been assigned the various degrees of recovery efforts for the following reasons:

Zone 1 contains the focus of the remaining kit fox population located in western Kern and eastern San Luis Obispo counties. It also contains the largest contiguous parcel of relatively undisturbed but manageable Federal land. The land is above the existing irrigation canals so that heaviest demands on the remaining land are for petroleum

developments and grazing rather than as cropland.

Zone 2 includes the remaining concentrations of the kit fox. Most of the desirable areas in this zone are in the foothills or other undisturbed wildlands on the periphery of agricultural developments. Because most of this area is privately owned, implementation of the plan here will be less than in Zone 1.

Zone 3 contains low density populations of the kit fox. Also, there is little public land in this zone.

Federal agencies assigned various areas of responsibility for implementation of the plan are the Fish and Wildlife Service, Bureau of Land Management, Geological Survey, Department of Energy, Bureau of Reclamation, Environmental Protection Agency, U.S. Navy, U.S. Army, and Soil Conservation Service. Involved State agencies are the Department of Fish and Game, Department of Parks and Recreation, Department of Water Resources, Division of Oil and Gas, and California Energy Commission.

Copies of the San Joaquin Kit Fox Recovery Plan are available from the Fish and Wildlife Reference Service. For more information on the plan, contact the Portland Regional Director (see page 2 for address).

Guidelines

Continued from page 4

The first proposed criterion is the degree of threat. Thus the species with the highest degree of threat have the highest priority for preparation and implementation of a recovery plan. The second criterion concerns the degree of recovery potential; those species with high recovery possibilities within each "degree of threat" category would be given high recovery priority. The third criterion is intended to devote resources on a priority basis to those species representing highly distinctive or isolated gene pools; taxa that are most genetically distinct would receive priority within any given category of threat. As with the third criterion, the fourth is directly responsive to the requirements of the 1982 amendments to the Act. The fourth criterion assigns priority to recovery planning depending upon whether or not the species is in conflict with construction or other development projects or other forms of economic activity. Any listed species or subspecies, lacking a recovery plan, and identified as being or having a reasonable potential for being in conflict with construction or a development project, would qualify for the conflict column of the recovery priority matrix.

The Service recognizes that it is necessary to assign priorities to listing, delist-

ing and recovery actions in order to make the most appropriate use of limited resources. Since the proposed priority systems are based on factors that are subjective to some degree, they must be viewed as guides and should not be looked upon as inflexible frameworks for determining resource allocations.

All comments on these proposed guidelines should be sent to the Associate Director—Federal Assistance, U.S. Fish and Wildlife Service, Washington, D.C. 20240, Attention: Priority Guidelines. Comments must be received by June 20, 1983.

BOBCAT

Continued from page 3

California, Colorado, Florida, Georgia, Idaho, Kansas, Klamath Tribe, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Navajo Nation, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Comments on the proposed findings and the criteria for Scientific Authority advice are summarized and discussed in the April 18, 1983, rulemaking. Please refer to *Federal Register*, Vol. 48, No. 75, pp. 16494-16498.

Regulations on Subsistence Take of Green Turtles Under Review

In response to requests from the Governments of Guam and the State of Hawai'i, the National Marine Fisheries Service (NMFS) has announced its intent to review the special regulations governing the subsistence take of green turtles (*Chelonia mydas*) in portions of the species' range where it is listed as Threatened (F.R. 4/20/83). Taking of these sea turtles for subsistence purposes currently is allowed by residents of the Trust Territory of the Pacific Islands, and NMFS will be determining whether the existing provisions should be modified and whether subsistence taking should be allowed in other areas of the Central and Western Pacific Ocean.

Responsibility for listed sea turtles is shared between the Departments of Commerce (NMFS) and the Interior (Fish and Wildlife Service). NMFS manages sea turtles in their marine environment. When the green turtle was listed on July 28, 1978, an exception to the general prohibitions on taking was granted by NMFS under 50 CFR Part 227 Subpart D for Trust Territory residents, providing that the take was for personal use and that the turtles were taken at sea. This exception was allowed after the Government of the Trust Territory of the Pacific Islands documented the traditional use of green turtles by native residents. The exception was not extended to other areas of the Central and Western Pacific because NMFS believed a complete prohibition was needed in those areas to effectively control commercial trade in the species. Also, evidence was presented that the green turtle population in Hawai'i had declined.

Residents and the Governments of Guam and the State of Hawai'i have requested NMFS to consider expanding the rule allowing subsistence taking. NMFS has agreed to review the special regulations, and is asking for comments and information from all interested agencies, organizations, and individuals. Responses to the notice should be addressed to Mr. Alan W. Ford, Southwest Regional Office, National Marine Fisheries Service, 300 South Ferry Street, Terminal Island, California 90731 by June 20, 1983. Public meetings on the review were scheduled for May and early June in Hawai'i, Guam, the Northern Mariana Islands, and American Samoa.

ASH MEADOWS

Continued from page 5

ing that was held in Amargosa, Nevada, May 26, 1983.

The reopened comment period will close on June 2, 1983. Comments should be addressed to the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232.

Both fishes are endemic to the desert wetland ecosystem of Ash Meadows, Nevada, and are threatened by large scale residential/agricultural development. Both have been temporarily listed as Endangered in two emergency rules (F.R. 5/10/82 and F.R. 1/5/83). Simultaneous with the publication of the second emergency rule, the Service proposed listing the two fishes on a permanent basis and making a final determination of their Critical Habitat. An earlier hearing on this proposal was held in Las Vegas, Nevada, on February 11, 1983.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	18
Birds	52	14	144	3	0	0	213	32
Reptiles	8	6	55	8	4	0	81	6
Amphibians	5	0	8	3	0	0	16	2
Fishes	29	4	11	12	0	0	56	20
Snails	3	0	1	5	0	0	9	3
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	7
TOTAL	199	44	444	48	7	24	766	92**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of species currently proposed: 36 animals
7 plants

Number of Critical Habitats listed: 55
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 86
Number of Cooperative Agreements signed with States:

38 fish & wildlife
11 plants

April 30, 1983

The March 1983 BULLETIN story on the black-footed ferret contained a summary of research projects being conducted by various State wildlife agencies under Section 6 endangered species grants from the Service. Inadvertently left out was a \$20,000 research project on the ferret to be conducted this fiscal year by the New Mexico Game and Fish Department with Section 6 carryover funds.

New Publication

The IUCN Invertebrate Red Data Book, the latest in the revised red data book series, is now available for \$20.00. It was compiled jointly by S.M. Wells, R.M. Pyle, and N.M. Collins and illustrated by S.A. Hughes. This innovative work includes detailed reviews of over 200 taxa and 50 illustrations. A particular effort has been made in this volume to emphasize the importance of invertebrates in ecological processes and as a living resource of benefits to humankind.

In the USA, Canada, Latin America, and the Caribbean orders should be placed with: UNIPUB, Box 433, Murray Hill, New York, NY 10016, U.S.A. Orders from outside the Americas should be placed with IUCN Conservation Monitoring Centre, 219(c) Huntingdon Road, Cambridge CB3 0DL, England or IUCN Publications, Avenue du Mont-Blanc, 196 Gland, Switzerland. From Cambridge the price is L12 (US \$20) plus L2 (US \$3) postage and packing per volume surface mail (air-mail by request only); from Switzerland, L12 (US \$20) per volume plus 10% of total purchase price for surface mail, 30% for airmail.

May 1983

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

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Arizona Agave Proposed as Endangered

The Arizona agave (*Agave arizonica*), a succulent known only from a small area in central Arizona, has been proposed by the Service for listing as an Endangered species (F.R. 5/20/83). This plant is jeopardized by collection for cultivation and trade and by habitat disturbance due to cattle grazing.

Agave arizonica was discovered by J. H. Houzenga, H. J. Hazlett, and J. H. Weber in the New River Mountains of Arizona. Weber and H.S. Gentry described it as a species in 1970 (*Cactus and Succulent Society Journal* 42(5): 223-225). This member of the Agave family has basally attached leaves in a somewhat flattened globular rosette which measures about 30.7 centimeters high and 41 centimeters broad. Its slender, branching inflorescence (flowering stalk) is 2.7-3.6 meters tall. The flowers are small, pale yellow, and jar-shaped. These characteristics make the Arizona agave an attractive plant, and one highly desired by collectors for desert rock gardens. Unfortunately, *Agave arizonica* is a slowly reproducing plant which could not readily repopulate an area from which individuals are removed. The Arizona agave is endemic to a very small area in the granite hills and creek bottoms near the summit of the New River Mountains within the Tonto National Forest. Its historically known population occurred within an area of about a 3.3 to 5.0 kilometer radius. In 1980, about 25 plants were known at 12 to 14 localities, but today only 3 plants are known to remain at only one site. The land use on this area consists of leased cattle grazing.

There is a great potential for taking of this attractive species for cultivation and trade. In recognition of this threat, the southwest botanist of the U.S. Forest Service has suggested that the agency prohibit the taking of all agaves in the west central portion of the Tonto Mountains within the species' range. However, such prohibitions are difficult to enforce in the extremely rugged backcountry, especially with the limited number of personnel available for patrol.

Cattle grazing may have an effect on the agave by trampling, habitat disturbance, and some minor grazing of the

plants. In addition, deer browse this species and may play a role in its poor reproductive success by eating the flower stalks before the capsules ripen. If the agave is listed, studies will be undertaken to determine specific grazing impacts and any compatible levels of grazing use.

Although the Arizona agave is protected by the Arizona Native Plant Law, this bars only collection, not incidental destruction or habitat modification. It does not affect Federal actions directly. Violations only constitute a class three misdemeanor, the lowest grade recognized under State law. Moreover, the law is difficult to enforce over the entire State of Arizona, especially in the rugged, mountainous regions. Listing the plant in accordance with the Endangered Species Act would complement the existing measures and offer additional protection from Federal activities, taking on Federal lands, and trade, as well as increase the penalties for violations.

Agave arizonica was first proposed for listing in June 1976, along with about 1,700 other plants identified in a petition prepared by the Smithsonian Institution. In accordance with the listing schedule deadlines imposed by the 1978 Endangered Species Act Amendments, the proposal was withdrawn in 1979. On December 15, 1980, the Service published a new notice of review for plants which included *Agave arizonica* as a candidate for listing.

Effects of a Final Rule

If the proposal is approved as published, the Arizona agave will be listed under the Act as an Endangered species. Section 7 of the Act requires all Federal agencies to ensure that any activities they authorize, fund, or carry out are not likely to jeopardize the species' continued existence. Since all populations of the Arizona agave occur on U.S. Forest Service lands, that agency will have the primary Section 7 responsibility, and it has given its support to the listing proposal.

With regard to trade of *Agave arizonica*, all of the prohibitions contained in 50 CFR 17.61 on interstate and interna-

tional trafficking would apply. Further, the 1982 Endangered Species Act Amendments make it unlawful to remove and reduce to possession Endangered plant species from areas under Federal jurisdiction or to sell it, offer it for sale, or deliver, receive, carry, transport, or ship it in the course of a commercial activity. Special permits for certain otherwise prohibited activities could be requested under 50 CFR 17.62 and 17.63 from the Federal Wildlife Permit Office. Critical Habitat for the Arizona agave is not being proposed since publication of the precise location in the *Federal Register*, as required by such a designation, would make the species more vulnerable to collection. It should be emphasized, however, that even without a formal Critical Habitat determination, the Arizona agave will receive the full habitat protection authorized under Section 7 of the Act.

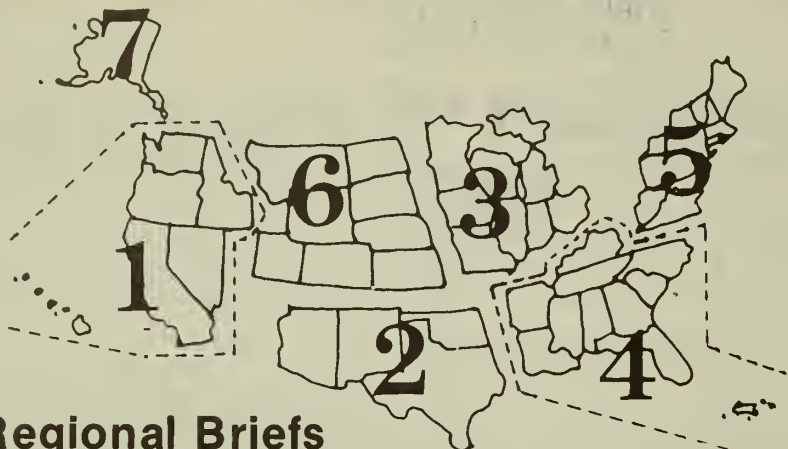
Public Comment Requested

Comments on the proposal are requested from all interested agencies, organizations, and individuals, and should be received at the Office of Endangered Species, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 by July 19, 1983. Requests for a public hearing on the proposal must be received by July 5, 1983.



This attractive plant, the Arizona agave, is threatened by collection for cultivation and trade.

Courtesy of the Desert Botanical Garden, Phoenix, Arizona.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of May:

Region 1—The vegetation management program on the Morro Bay Ecological Preserve to restore habitat of the Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*) was completed this April (see April 1983 BULLETIN). The project included thinning scrub

vegetation on two study plots and removal of exotic iceplant from the preserve. The targeted plants were removed by hand by members of the California Conservation Corps and all removed plant material was disposed of off site.

Field observations of southern sea otter (*Enhydra lutris nereis*) response to underwater acoustical tests and air gun blasts were completed this past month. Preliminary analysis of the data indi-

cates that the tests have not had significant adverse effects on sea otter behavior. These behavioral studies were undertaken to ensure that gray whale (*Eschrichtius robustus*) behavioral studies now underway were not adversely affecting the sea otter.

The Sierra snow pack is in excess of 200 percent of normal, allowing for unusually high Truckee River stream flow to enter Pyramid Lake throughout the rest of the year. Cui-ui (*Chasmistes cujus*) are responding to these conditions by congregating at the river end of Pyramid Lake in substantial numbers. Through gill netting, we are finding that this year's prespawning aggregate is comparable in density to that of last spring, when a record 14,000 ran the Pyramid Lake Fishway. We anticipate a similar size run this year. We assume, however, that cool spring temperatures have delayed the timing of the run. Last spring, the first cui-ui entered the fishway system in mid-April, while none had entered the system this spring as of May 27.

Region 2—About 45,000 bonytail chub (*Gila elegans*) fry were stocked in the backwaters of Lake Mohave (Arizona) in an effort to maintain the only known wild population of this Endangered species. Past studies indicate that the population in Lake Mojave is made up of individuals at least 40 years old, well past their expected breeding years. If the reintroduction is successful, it will provide genetic stock for future reintroductions into more suitable habitat.

Wolf pups are popping up all over. Thirteen Mexican wolf (*Canis lupus baileyi*) pups have been produced at the Wild Canid Survival and Research Center (St. Louis), the Rio Grande Zoo (Albuquerque), and the Arizona-Sonora Desert Museum (Tucson). These litters more than double the number of Mexican wolves in captivity, and provide a better chance for survival of the subspecies because seven of the young are females.

The Service met recently with the State of Texas, The Nature Conservancy, and private landowners to discuss habitat protection for the Navasota ladies'-tresses (*Spiranthes parksii*). Proposed road construction near College Station, Texas, would jeopardize several individuals of this rare orchid, which is believed to number no more than 150 plants. Rapid protection of a privately owned tract of 640 acres, which is adjacent to a proposed highway and which contains the majority of the plants, is essential if the species is to survive.

Under contract to the Service, the New Mexico Department of Fish and Game is preparing a recovery plan for the New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*).

Region 5—Peregrine falcons (*Falco*

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U.S. Fish and Wildlife Regions

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Continued on page 7

Transshipment Amendment Proposed for Sea Turtles

The Service has proposed to amend the Special Rules for sea turtles under the Endangered Species Act to allow transshipment of certain green sea turtle (*Chelonia mydas*) products through the port of Miami (F.R. 5/4/83). The special rules currently prohibit import and export of commercial shipments of green sea turtle products, regardless of final destination.

Green sea turtles are protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). An exception under CITES, however, allows transshipment of listed specimens through a country that

is a Party to CITES provided the specimens remain in Customs control. The Cayman Islands Government has requested that the Secretary of the Interior and the Secretary of Commerce amend the Endangered Species Act Special Rules to allow shipments of green sea turtle products to transit the United States, thereby providing harmony with the CITES exception. As proposed, these rules would grant that request under certain restrictions that would enable the Service to monitor traffic in such shipments. The comment period ended June 3, 1983.

Hearing Scheduled On Cave Shrimp Proposal

A public hearing will be held and the comment period reopened on a proposal of Endangered status and Critical Habitat for the Kentucky cave shrimp (*Palaemonias ganteri*). The Service has arranged these events to allow comment from government officials and the public (F.R. 6/7/83).

The hearing will be held at 7:00 p.m. on June 28, 1983, in the Community Building, which is in the vicinity of the Visitor's Center, at Mammoth Cave National Park, Edmonson County, Kentucky. The reopened comment period will close on July 7, 1983. Comments

should be addressed to the Regional Director, U.S. Fish and Wildlife Service, The Richard B. Russell Federal Building, 75 Spring Street, S.W., Atlanta, Georgia 30303.

The proposal to list the Kentucky cave shrimp as Endangered with Critical Habitat was published in the *Federal Register* on October 17, 1980. A public meeting on that proposal was held in Bowling Green, Kentucky, on December 10, 1980. Since that time, the National Park Service has been carrying out studies of the distribution, status, and life history of the species.

Utah Prairie Dog Proposed for Reclassification

The Utah prairie dog (*Cynomys parvidens*) has been proposed by the Service for reclassification from Endangered to Threatened (F.R. 5/13/83). Although this rodent still only occupies a small part of its historical range, its overall numbers have increased since 1972. Two populations are now straining the carrying capacity of the available habitat, making them vulnerable to disease; in addition, conflicts with human agricultural interests are growing. To help prevent disease and illegal killings by area landowners, the proposal includes a special rule that would allow for the regulated take of up to 5,000 individuals annually under permit and in accordance with specific restrictions.

The species is a burrowing rodent in the squirrel (Sciuridae) family that occurs only in southern Utah. Its numbers have fallen from an estimated 95,000 individuals in the 1920s to a 1982 spring estimate of about 10,000 adults. The species has also experienced a cor-

responding loss of range. This population decline was caused by disease, habitat alteration, and poisoning because the prairie dog was considered a competitor with livestock for forage. In 1973, the Utah prairie dog was listed as an Endangered species. On November 5, 1979, the Utah Division of Wildlife Resources petitioned the Service to remove the prairie dog from the U.S. List of Endangered and Threatened species.

Today, the Utah prairie dog is no longer considered in danger of extinction, although the Service does not feel that the available data show it has recovered to the point where it can safely be removed from the list altogether. The population estimate of adult animals in the Cedar and Parowan Valleys in eastern Iron County increased significantly from 1976 (1,200) to spring 1982 (7,300). It should be noted that early spring censuses include only those adults that have survived the winter. In the summer, after the young are born and become active, but before the fall/winter mortal-

ity, the numbers are much higher. This is the time when it is necessary to reduce population pressures in the Cedar and Parowan Valleys; the summer numbers in these valleys are probably in excess of 20,000 prairie dogs.

Such large numbers of juveniles strain the carrying capacity of the habitat, and increase the danger of sylvatic plague. There also is a serious conflict in these valleys with agriculture. In the Cedar and Parowan Valleys alone, 98 percent of all prairie dogs are on private land upon which the major crop is alfalfa, a preferred prairie dog food. Crop losses have become extensive where large prairie dog towns have developed, the mounds damage haying equipment, and the burrows drain irrigated fields. Since the species was given protection, its numbers have increased in some areas to the point that local farmers and ranchers might be tempted to return to such traditional, but now illegal, means as poisoning for relief. Uncontrolled measures like these could again reduce the species' population to an Endangered status.

In an effort to relieve the local overpopulation problems, the Utah Division of Wildlife Resources removed 2,437 animals from the Cedar and Parowan Valleys between 1976-1980 for relocating onto public lands. Although many of these animals apparently did not survive, the number of known prairie dog towns on private lands increased from 40 in 1976 to 57 in 1982; about 38 percent of all Utah prairie dog towns in 1982 throughout the species' total current range occur on public land. The State will continue to live-trap prairie dogs on private lands and relocate them to Federal lands, but it has become apparent that the relocation program is not able to keep up with the species' growing population in the Cedar and Parowan Valleys, and that new sites for reintroduction are limited. Accordingly, the proposed reclassification of the Utah prairie dog to Threatened contains a special rule that would permit the State to authorize certain individuals to legally take up to 5,000 animals annually between June 1 and December 31 in delineated portions of the Cedar and Parowan Valleys. Such taking would not be permitted by means of chemical toxicants.

The Service does not believe that the proposed control program would jeopardize the survival of the species in these valleys. Numbers of animals actually taken, their location, and the methods used would have to be reported to the Service at 90-day intervals. Further, the State will continue its annual Utah prairie dog census and will submit these data to the Service each year. The Service would reserve the right to im-

Continued on page 8

Recovery Plans Approved

Four Forest Birds of Hawai'i

The birds of Hawai'i, largest of the Hawaiian Islands, have suffered greatly from human activities and impacts on the fragile ecosystem. Ten of the bird species native to the island in historical times are now extinct; another eight are Endangered, and five other species survive in relatively healthy populations. A newly approved recovery plan addresses the status of four of the Endangered forest birds that have similar characteristics and habitat requirements: the Hawai'i creeper (*Loxops maculatus mana*), Hawai'i 'akepa (*Loxops coccineus coccineus*), 'akiapola'au (*Hemignathus wilsoni*), and 'o'u (*Psittirostra psittacea*).

Habitat degradation has played a major role in the decline of much of Hawai'i's native wildlife, including its forest birds. The forests of Hawai'i once were much more extensive than they are today. A drastic reduction resulted from overcutting for firewood, lumber, cropland, and pasture. Introductions of exotic livestock and game animals have been another significant factor. Grazing and browsing by feral ungulates have severely modified remnant forests at upper elevations on the Island of Hawai'i, and some of the wetter forests are subject to heavy rooting by feral pigs. Recently, a widespread die-back of 'ohi'a (*Metrosideros collina*), the most common native tree on Hawai'i, has further modified about 800 square kilometers of forest bird habitat. Increasing acreages also are being modified by the spread of exotic plant species, such as banana poka (*Passiflora mollissima*) and strawberry guava (*Psidium cattleianum*), whose seeds are distributed throughout the forests after feral pigs eat the fruits. Efforts to control

these species have so far been unsuccessful. All of these factors have combined to dramatically change the physiognomy and species composition of the remaining native forests.

The endemic forest birds of Hawai'i appear very vulnerable to introduced diseases, particularly avian pox and avian malaria. Both diseases are known to be transmitted on Hawai'i by an introduced mosquito (*Culex quinquefasciatus*), a major disease vector. (Avian pox can also be spread directly by contact among birds, and by mites.) So far, there is a lower incidence of these diseases in forest bird populations above 1500 meters (4900 feet), an evaluation that also marks an area of declining viable *Culex* populations. An introduction of a *Culex* strain more adaptable to higher elevations, and/or the evolution of the existing species into a form that could move into the upper forests, could greatly jeopardize the remaining birds.

Before the arrival of Captain James Cook in 1778, native Hawaiians took some forest birds for feathers. The subsequent use of the shotgun in the late 1800's by museum collectors and native Hawaiians may have put intolerable pressure on local bird populations already reduced by other factors. In addition to humans, several other predators have become established on Hawai'i, including the domestic cat (*Felis catus*), three species of rats (*Rattus* spp.), the mongoose (*Herpestes auropunctatus*), and the common myna (*Acridotheres tristis*). Exotic animals, especially birds, may be significant competitors with native forest birds for food, and the introduction of predacious and parasitic insects could have eliminated native insects upon which the

Hawaiian birds fed.

Island species are particularly vulnerable because of their limited geographical distribution and frequently low numbers. Since the contemporary role of these threats has not yet been determined, it is uncertain whether populations of Hawai'i forest birds are continuing to decrease. But their historical decline is evident:

- Hawai'i creeper—This bird formerly was found in the 'ohi'a and 'ohi'a-koa forests throughout the island, usually above 1070 meters (3600 feet). Today, it occurs in upper elevation native forests on the windward coast, and very rarely on the leeward coast in only three locations. The Hawai'i creeper generally feeds on insects taken from the trunks and branches of mature trees.

- Hawai'i akepa—At one time, this subspecies was widespread around the island, and abundant in some areas. Its current distribution includes the upper slopes of Mauna Kea and Mauna Loa on the windward coast; the southeastern slopes of Mauna Loa; and the southwestern slopes of Hualalai. The Hawai'i 'akepa seems to prefer the closed canopy of 'ohi'a and koa (*Acacia koa*) where it is largely a foliage gleaner, feeding on small arthropods.

- 'akiapola'au—Formerly, this bird was found throughout the native forests from 400 meters (1300 feet) upward. It remains locally common in the higher elevation koa and 'ohi'a forests on Mauna Loa, and is found only rarely in Hawai'i Volcanoes National Park. The 'akiapola'au is a wood hewer which seeks out the larvae of cerambycid beetles and other insects beneath the bark.

- 'o'u—This bird is the rarest honeycreeper on the Island of Hawai'i. Historically, it was common in the wet forests of Kona, windward Hawai'i, and Kohala, but today it comprises a small population scattered along the windward coast of mid-elevation 'ohi'a forests. Although it has been seen to feed on insects, it apparently relies more heavily on the fruits and flowers of 'ie'ie (*Freycinetia arborea*). The fouling of 'ie'ie fruit by introduced rats has been cited as a possible reason for the species' decline on O'ahu.

Habitat conservation, especially at upper elevations, will be extremely important for the recovery of these species. With avian pox and malaria occurring with greater frequency in lower areas, the remaining habitat above 1500 meters (5000 feet) will provide the last refuge for the native forest birds if the mosquito belt moves higher. Accordingly, securing the upper forest habitat and/or favorably influencing land management practices has high priority in the recovery plan. This goal could be accomplished not only by establishing



'akiapola'au (*Hemignathus wilsoni*)



'o'u (*Psittirostra psittacea*)

reserves or negotiating easements, but by habitat restoration. Removing feral livestock from essential habitat and erecting protective fences is another objective. With the cooperation of private landowners, an "archipelago" of native forest areas could be created in forested pastures now being managed only for cattle. Planting koa in mixed stands, thereby encouraging forest diversity, and managing these lands on varying time schedules to maintain native ecosystems in conjunction with compatible land management activities, are advocated in the plan.

Control of exotic plants is another task identified for conserving habitat. Banana poka, for example, is now found over large areas, choking out native vegetation, attracting feral pigs with its fruit, and providing a defensible food source for aggressive nectivorous birds (thereby creating an imbalanced avifauna). The plan calls for developing an effective way to eliminate this pest plant from essential habitat, and encourages research into biological controls.

Control of the avian disease vector *Culex*, also important for the recovery of the native forest birds, could be achieved in part by reducing the number of mosquito breeding sites. Methods outlined in the plan for accomplishing this objective include: control of feral pigs, thus reducing their wallows; removing non-essential water tanks, troughs, and ponds; and the possible use of biological control of mosquito larvae in other waters. Screening incoming planes and ships could help minimize

the possibility that other diseases or their vectors, as well as competitors or predators, could accidentally be introduced. Other means of controlling mosquitoes will be investigated.

There is reason for optimism about the recovery of these Endangered forest birds, as well as the other native, non-listed forest bird species. If the efforts of Federal, State, and local government agencies, as well as the private sector, can match these challenges described in the recovery plan, there is still time to conserve the remnants of the Hawai'i forest avifauna.

Copies of the Hawaiian Forest Birds Recovery Plan (approved February 3, 1983) and the Nene Recovery Plan (below: approved February 14, 1983) are available from the Fish and Wildlife Reference Service. Details on the plan and its implementation can be obtained from the Portland Regional Director (see page 2 for address).

Copies of these plans, and all approved recovery plans, will be made available for purchase from the Fish and Wildlife Reference Service, Unit j, 3840 York Street, Denver, Colorado 80205-3536 (800/525-3426). A 4-to-6 month printing time must be allowed following the date a recovery plan is approved by the Director, before copies may be available. A delay should be expected when ordering newly approved plans.



Hawai'i 'akepa (*Loxops coccineus coccineus*)
Illustrations by H. D. Pratt

Nene (Hawaiian Goose)



Hawaiian geese

The nene (*Branta sandvicensis*), or Hawaiian goose, is the State bird of Hawai'i. It is similar in size to the Canada goose (*Branta canadensis*), from which it may have evolved, but it is highly specialized and is now restricted primarily to a habitat of rugged lava flows in upland scrub growth far from any free water. Among the more obvious physical adaptations is a reduction in the webbing between the toes. Another difference the nene (pronounced "nay-nay") shows is that it nests in the fall when day lengths are becoming shorter, unlike most other geese. Also, a nene does not normally migrate from the island on which it is reared.

Like many other endemic Hawaiian species, the nene has declined sharply since Captain James Cook's arrival in 1778. In a 1945 historical account, "The Hawaiian Goose, Its Distribution and Reduction in Numbers" (*Condor*, 47:27-37), Paul Baldwin showed that the nene's range on the Island of Hawai'i once comprised 2,475 square miles, extending from upper elevations all the way down to sea level in many places. He also estimated that the nene population prior to 1778 numbered about

Continued on page 6

Nene

Continued from page 5

25,000. Due to various human-related factors, the wild population on Hawai'i had dwindled by 1952 to approximately 30 birds on a few remote upland pockets. Some movements of nene between Hawai'i and the Island of Maui are believed to have occurred, but any resident population on Maui became extinct before 1890. Fortunately, a relatively successful captive propagation and release program has given some reason for hope that the nene will survive in the wild.

Specifically, Baldwin listed probable causes for the decline as overhunting with firearms, increased taking of live birds and eggs, harassment of birds during nesting and foraging, and ranch development. Less direct, but still significant, human-related factors included introductions of predators (rats, feral pigs, feral dogs and cats, and the mongoose), competition from introduced birds, and the adverse effects of introduced plants on nene habitat. Further habitat damage resulted from grazing by domestic livestock, as well as from feral sheep, goats, and pigs.

More recent data indicate that the continuing decline in wild nene is due in part to low productivity. This problem may be linked to poor nutrition available in current nene habitat, particularly during the critical period when broods are being reared and adults are molting. A comparatively low percentage of adult nene in the wild actually breed each year (only about 50 percent), and gosling mortality is very high in the wild. Predation on eggs and incubating or brooding females also is significant.

Propagation and Release

With support from the Fish and Wildlife Service (FWS), the Hawai'i Division of Fish and Game (HDFG) has conducted a project over the past 30 years to propagate captive nene for restocking into suitable habitat and to conduct field studies on wild birds. Nene have been produced since 1949 at Pohakuloa, on the Island of Hawai'i, and reintroduction began in 1960 with the release of 20 young at the Keauhou Sanctuary. A total of 1,319 nene had been released by June 30, 1982, at four sanctuaries on Hawai'i. Three of the sanctuaries, Keauhou, Keauhou 2, and Kahuku, were established through cooperative agreements with landowners, and the fourth is on State lands (Kipuka 'Ainahu Nene Sanctuary).

At about the same time that the captive nene program began in Hawai'i, the Severn Wildfowl Trust in England initiated its own propagation effort. The

Trust has been very successful with the nene, and has distributed breeding stock to many other zoos and aviaries, as well as to the FWS Patuxent Wildlife Research Center and the State of Hawai'i. Consequently, there is now an ample supply of nene in captivity.

In 1972, the National Park Service (NPS), in cooperation with the FWS and HDFG, began a nene restoration program at Hawai'i Volcanoes National Park. Predator-resistant, fenced enclosures have been constructed in current and former nene habitat, each holding a pair of wing-clipped adult birds that can live and breed under semi-natural conditions. Nene offspring are permitted to leave the pens to occupy the surrounding habitat. These areas have been improved through control of feral livestock, introduced predators, and exotic plants, and by reintroducing native plants. By November 1978, nine enclosures had been set up in locations ranging in elevation from sea level to 4,000 feet. Although gosling mortality has been high, it is thought that at least 30 nene have survived to adulthood in the park.

A similar, though less intensive program has been attempted at Haleakala National Park on Maui. Three nene enclosures have been constructed at the park headquarters to maintain three breeding pairs. During the 1973-1974 breeding season, four goslings were raised by two pairs; however, only one gosling was raised from 17 eggs laid during the 1977-1978 season. The NPS nene activities on Maui supplemented the HDFG release program that began on that island in 1962. In that earlier effort, birds from the Severn Wildfowl Trust were released at Paliku, and others from the Pohakuloa breeding station on Hawai'i went to Paliku and Hosmer Grove. A total of 489 nene have been released on Maui.

Survival and dispersal of released nene are the main subjects of a field study being conducted as part of the restoration effort. Data on nesting, predation, movements, and other aspects of nene ecology also are being collected. An analysis of data gathered since 1975 indicates that the nene population on Hawai'i has actually declined, and that the same thing has happened on Maui. NPS research points to very low productivity of the nene in the wild. Almost half the adult nene under observation during 1978-1981 failed to breed each year. The low breeding effort and high gosling mortality may be linked with a lack of adequate food during the critical breeding/molting period.

Predation could be another significant factor in the low productivity. Young nene cannot fly until 11-14 weeks after hatching, and adults are flightless for 4-6 weeks during their molt. At these times, the birds are extremely vulnerable

to predation by dogs, cats, feral pigs, and mongoose. Studies at Hawai'i Volcanoes National Park implicate mongoose in 72 percent of the eggs and brooding females lost from nests under observation.

Recovery

The primary objective of the Nene Recovery Plan is to establish populations of 2,000 nene on Hawai'i and 250 on Maui, well distributed on secure habitat and maintained exclusively by natural reproduction. Minimizing nene mortality in the wild and further supplementing the wild population with periodic releases of captive propagated birds so that the populations can become self-sustaining have high priority in the plan. Mortality is particularly important since the nene has such low productivity compared with other species of geese. Losses of nests and broods could be reduced by restricting access to nene nesting areas during the critical breeding season through agreements with private landowners and public land managing agencies. Predator control programs in these areas would give the nene an even better opportunity to increase.

Conservation of key habitat for the nene, especially feeding and nesting areas, is essential if the wild population is to recover. Approximately 25 percent of this habitat is managed by government agencies and is relatively secure, but the remainder is in private ownership and is subject to adverse development. Cooperative agreements or conservation easements with landowners could give more consideration to the needs of the nene in management of these areas.

The plan also calls for establishing additional breeding populations on Hawai'i, and recommends that further reintroductions at lower elevations be considered. This would help in assessing the significance of nutrition in the nene's low productivity since some lower areas may have better quantities and quality of food; it would also minimize threats to the species' survival from losses of upland populations. The habitat currently occupied by the nene is apparently the best remaining, but is not necessarily the optimum or preferred habitat.

A monitoring program is incorporated in the plan to detect population trends and to evaluate the success of the recovery effort. Part of this program may consist of a complete life history study on the nene to better understand the effects of nutrition, competition with introduced turkeys (*Meleagris gallopavo*), impacts on the habitat from exotic ungulates, and losses of goslings from disturbance during adverse weather conditions.

Giant Anole

The Culebra Island "Giant" anole (*Anolis roosevelti*) is known from only two preserved specimens, both taken from Culebra Island, Puerto Rico, and has not been collected since 1932. For these reasons some authors have expressed the opinion that the species is extinct; however, there is reason to believe the species survives in remaining forest on Culebra Island.

Accordingly, the Service approved the Culebra Island "Giant" Anole Recovery Plan on January 28, 1983. The plan calls for surveys to confirm the existence of the species, and for efforts to protect the few remaining patches of fig forest on Culebra until such time that it can be assured the species is extinct or until it is rediscovered and its precise habitat requirements are determined.

A. roosevelti, a rather large brownish-gray lizard growing to about 160mm snout-vent length, was first described by Major Chapman Grant in 1931 on the basis of one specimen collected by a local child on Culebra. In 1932, Major Grant received and reported on another specimen of this species also collected by a local resident of the island. This was the last specimen of the species to be seen by biologists.

Recent workers have located Mr. Dumas, the person who collected the lizard for Major Grant in 1931, who not only remembers the habits of the lizard but claims to have seen one as recently as 1978. Mr. Dumas described the lizard as living high in the trees where it was occasionally seen in the branches, and

he claimed that he saw it most commonly when the fruits of the trees, especially the *Ficus*, are ripe. Mr. Dumas relates that the first specimen of *A. roosevelti* was collected on the Flamenco Peninsula before it was deforested. That area once supported a forest of tall gumbo-limbo (*Bursera*) and *Ficus* trees, much like the small patches that remain on steep northern slopes of the island.

A. roosevelti is listed as Endangered under the Endangered Species Act of 1973, and Critical Habitat has been determined on Culebra Island to include most of the remaining forest habitat. These remaining patches of virgin forest should be large enough to maintain a few lizards; however, several parties of herpetologists have made specific searches for the species in the last few years without success.

According to the newly approved recovery plan for the anole, the species will be considered "recovered" only when, among other things, field studies have determined that the species is still extant in the wild, and that the biotic and abiotic factors essential for the species' continued survival are known. In addition, the plan calls for programs to monitor the stability of the lizards' population size and habitat.

Copies of this recovery plan are available from the Fish and Wildlife Reference Service. For more information regarding the Culebra Island "Giant" Anole Recovery Plan, contact the Atlanta Regional Director (see page 2 for address).

Regional Briefs

Continued from page 2

peregrinus) are nesting this year on two bridges in New York City. The pairs are known to be raising five young. An interesting aspect is that one of the two adult female peregrines was hatched in an eyrie in central New Hampshire in 1981. A third pair appears to be nesting under the Bay Bridge near Annapolis, Maryland.

Canadian bald eagle (*Haliaeetus leucocephalus*) work is proceeding well, thanks to the excellent cooperation of our Canadian counterparts. Surveys to identify potential donor nests are complete in Manitoba, Saskatchewan, and Nova Scotia. All three provinces are willing to provide some birds to States on this side of the border.

On April 7, Regional Botanist Richard Dyer received the prestigious "Outstanding Achievement in Conservation" award at the 61st annual meeting of the New England Wildflower Society. Dyer was cited for his contributions to the Society's goals of education and conservation. Specifically highlighted were his roles in protecting Maine's St. John River watershed and developing the regional publication *New England's Rare, Threatened, and Endangered Plants*.

Region 6—Chris Servheen, the Service's Grizzly Bear Coordinator, chaired a workshop for developing a trend monitoring system for grizzly bear (*Ursus arctos horribilis*) research. Development of a trend monitoring system is a number one priority task in the Grizzly Bear Recovery Plan. It is very important that agencies be able to determine the trend of grizzly populations so that they can monitor the effects of their management actions on these populations. Five types of trend monitoring systems identified at a similar workshop in 1982 have been field tested to some extent. The results of these studies were discussed, and plans were made for future work.

The Interagency Grizzly Bear Steering Committee met in November of last year. One action was the appointment of a subcommittee to reexamine population data for grizzlies in the Yellowstone Ecosystem. The subcommittee met in January, and in February it presented its findings to the full committee in Salt Lake City, Utah. It was concluded that although there had been a significant decline in numbers of female grizzly bears with cubs since 1959, no detectable trend was evident from 1974 to 1982. It was calculated that, as of 1980, there was a minimum of 183 to 207 grizzly bears in the ecosystem. This count was an estimate based upon documented sightings of female grizzlies with cubs.

The Montana Bald Eagle Working Group met in April. The main item of

Continued on page 8

More California Condor Chicks Hatched

Three more California condor (*Gymnogyps californianus*) chicks hatched during April/May, two at the San Diego Zoo and one in the wild. This brings the number of chicks known to have been produced this spring (as of June 1) to five. Four of these chicks hatched from eggs collected under permit for captive breeding in the future.

Two condors had hatched earlier this season (see the April 1983 BULLETIN), and the third chick at the San Diego Zoo emerged from its egg on May 25. Earlier, the sporadic incubation that the egg received from its natural parents before it was taken to the zoo was thought to have damaged its chances of hatching. A fourth chick hatched at the zoo 2 days later from an egg laid on March 30 and collected on April 26. All four chicks are responding well to the care they are receiving from the zookeepers. A chick was hatched this spring in the wild as well, and is being raised by its natural parents. Further, another condor pair is incubating its third egg of the season in the first confirmed case of "triple clutching" by California condors. (The pair's first egg was one of those hatched at the San Diego Zoo, and its second egg

became broken during incubation by the adult birds.)

One troubled California condor breeding pair lost two eggs last year during squabbles over incubation rights, and similar problems this spring led to the collection of its second egg for safe keeping and hatching at the San Diego Zoo. In an effort to gain some insight into the birds' puzzling behavior and to see if California condors will accept a chick placed into a nest, an Andean condor (*Vultur gryphus*) chick from the Patuxent Wildlife Research Center (PWRC) flock was substituted for the dummy egg that had been put in the pair's nest earlier. (An Andean surrogate was chosen for the experiment since 1) these birds are not as rare as the California condor, 2) PWRC work has shown that Andean condor pairs will accept artificially incubated eggs, and 3) they are already being produced in captivity.) One day later, however, the Andean chick was nudged out of the nest during examination by an adult condor and rolled over a ledge. It was quickly taken to the San Diego Zoo where it seems to have recovered well.

Regional Briefs

Continued from page 7

discussion was the management guidelines that are being developed.

Region 7—Peregrine falcon field activities planned for the summer of 1983 include nesting surveys and nestling banding on the Tanana, Yukon, Porcupine, and Colville Rivers. This marks the fifth year the Service has conducted surveys and banding efforts in peregrine concentration areas in Alaska. If peregrine productivity continues to increase as it has in the recent past, Service biologists and contractors may band over 200 nestlings this summer.

Several Aleutian Canada goose (*Branta canadensis leucopareia*) research and recovery activities are scheduled for this field season. Research efforts are being directed toward clarifying the taxonomic status of geese nesting along the Alaska Peninsula (Semidi Islands) and the eastern Aleutian Islands. The removal of introduced Arctic foxes (*Alopex lagopus*) from Amukta and Kiska Islands will be initiated this summer. When fox removal efforts are completed, more island habitat will be available for nesting by Aleutian geese and a multitude of other native marine and land birds. Lastly, in the continuing effort to reestablish former breeding populations, as many as 200 adults and goslings will be trapped on Buldir and released on Agattu Island in August. The Service has chartered the marine vessel *Western Pacific* for logistical support in the Aleutians this summer.

Prairie Dog

Continued from page 3

diately halt any taking if it receives substantial information that the survival

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	18
Birds	52	14	144	3	0	0	213	33
Reptiles	8	6	55	8	4	0	81	6
Amphibians	5	0	8	3	0	0	16	2
Fishes	29	4	11	12	0	0	56	20
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	7
TOTAL	199	44	444	48	7	24	766	95**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of species currently proposed for listing: 36 animals
8 plants

Number of Critical Habitats determined: 55
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 89
Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

May 31, 1983

of the populations in the effected areas is being jeopardized.

Effects of a Final Rule

If the proposal is approved as proposed, the status of the Utah prairie dog will be reclassified under the Endangered Species Act from Endangered to Threatened, and the special rule authorizing a limited control program would go into effect as authorized in 50 CFR 17.31. The species would continue to receive protection as a Threatened species, including the habitat conservation measures in Section 7 of the Act. Permits for

certain activities affecting Threatened species could be authorized under the provisions of 50 CFR 17.32.

Public Comment Requested

Comments on the proposal or possible alternatives are requested until July 12, 1983, from all interested agencies, organizations, or individuals, and should be addressed to the Denver Regional Director, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225. Requests for public hearings must be received in writing by June 27, 1983.

June 1983

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Revised Interagency Consultation Rules Proposed

New regulations to assist Federal agencies in meeting their responsibilities under the Endangered Species Act of 1973, as amended, have been proposed (FR 6/29/83). If approved, the revised rules will formally implement amendments to the Act affecting the Section 7 interagency consultation process.

Under Section 7 of the Act, all Federal agencies are responsible for insuring that any actions they fund, authorize, or carry out are "not likely to jeopardize the continued existence of any listed species or result in the destruction or

adverse modification" of its habitat. Federal agencies whose actions may affect a listed species are required to initiate consultation with the Fish and Wildlife Service (Department of Interior) or the National Marine Fisheries Service (Department of Commerce) in order to evaluate the potential impact of the activity on Endangered and Threatened species and their habitat. If it is determined that the activity is likely to jeopardize the species or adversely affect its habitat, then "reasonable and prudent" alternatives that would avoid jeopardy and can be implemented will be

included in the biological opinion, thus allowing the activity to proceed. It should be noted that from 1979 through 1982, nearly 12,000 consultations were conducted; only about 1.5 percent resulted in findings that the action would be likely to jeopardize a listed species, and even in these few cases alternatives were agreed upon that allowed the activities to proceed.

The basic rules under which Section 7 interagency consultations have been conducted were established on January 4, 1978 [50 CFR 402(1981)]. Since then,

Continued on page 10

Service Lists 17 Foreign Reptiles

The Service has listed 17 species of foreign reptiles as Endangered or Threatened under the Endangered Species Act, as amended (F.R. 6/22/83). This determination provides additional protection to wild populations of these species and allows cooperative research programs to be undertaken on their behalf.

The threats that are believed to be causing the declines of these species are habitat destruction, the introduction

of non-native predators, exploitation as a source of human food mainly by local people, vandalism, and overcollection. These species (listed below) were proposed for listing on January 20, 1983 (see February BULLETIN for species accounts).

Comments Received

A total of 6 comments, all from private citizens, were received during the public

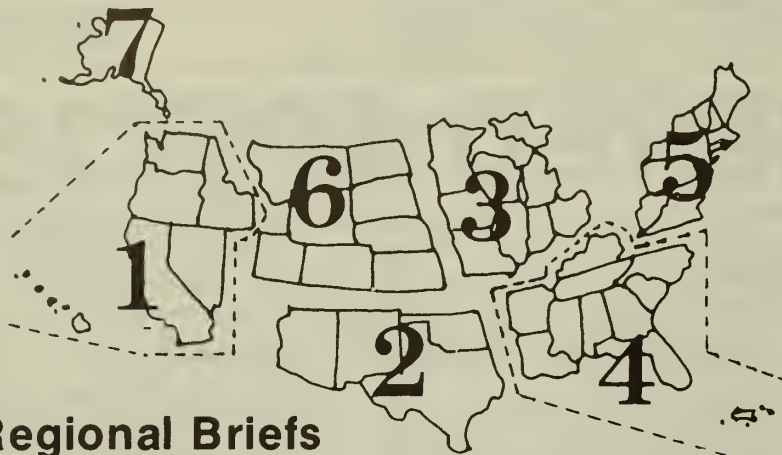
comment period following publication of the proposed rule; four were completely supportive of the listing. A letter from Dr. Brian Groombridge of the IUCN Species Conservation Monitoring Unit, Cambridge, England, added new information on *Cyrtodactylus serpensinsula*, *Gallotia simonyi simonyi*, and *Vipera latifii*. Mr. Ed Schmitt of the American Association of Zoological Parks and Aquariums (AASPA) opposed listing the Serpent Island gecko, Round Island skink, and Lar Valley viper on the basis of the lack of habitat protection afforded by a U.S. listing action; he did not question the biological basis of the proposed status. Mr. Schmitt also questioned whether the Cuban iguana would benefit from listing and stated that the species is doing well in Cuban zoos. He

Continued on page 8

Common Name	Scientific Name	Status
Serpent Island gecko	<i>Cyrtodactylus serpensinsula</i>	Threatened
Acklins ground iguana	<i>Cyclura rileyi nuchalis</i>	Threatened
Allen's Cay iguana	<i>Cyclura cychlura inornata</i>	Threatened
Andros Island ground iguana	<i>Cyclura cychlura cychlura</i>	Threatened
Cayman Brac ground iguana	<i>Cyclura nubila caymanensis</i>	Threatened
Cuban ground iguana	<i>Cyclura nubila nubila</i>	Threatened
Exuma Island iguana	<i>Cyclura cychlura figginsi</i>	Threatened
Grand Cayman ground iguana	<i>Cyclura nubila lewisi</i>	Endangered
Jamaican iguana	<i>Cyclura collei</i>	Endangered
Mayaguana iguana	<i>Cyclura carinata bartschi</i>	Threatened
Turks and Caicos iguana	<i>Cyclura carinata carinata</i>	Threatened
Watling Island ground iguana	<i>Cyclura rileyi rileyi</i>	Endangered
White Cay ground iguana	<i>Cyclura rileyi cristata</i>	Threatened
Round Island skink	<i>Leiolopisma telfairii</i>	Threatened
Central American river turtle	<i>Dermatemys mawii</i>	Endangered
Aruba Island rattlesnake	<i>Crotalus unicolor</i>	Threatened
Lar Valley viper	<i>Vipera latifii</i>	Endangered



The Aruba Island rattlesnake (above), as well as 16 other foreign reptiles, have been added to the U.S. List of Endangered and Threatened Wildlife.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of June:

Region 1—Only four to five California least terns (*Sterna albiglrons browni*) are using the Seal Beach NWR in Orange County to forage. Earlier, a maximum of about 12 birds were seen using the refuge, but this dropped rapidly. No nesting is occurring on NASA Island

despite intense efforts to prepare the site. Currently, one or two birds have been seen around the island, but no breeding behavior, either aerial or on the ground, was observed. It appears that NASA Island has no chance this year of being used by first-wave nesters. Other sites in the southern California area are well established. Bolsa Chica, another small wetland area, has about 100 pairs, most of them on eggs. Six banded Ana-

heim Bay (NASA Island) birds are nesting at this nearby site.

A helicopter was used by Robert Parenti (FWS botanist, Boise Endangered Species Office) to survey the canyons along the lower end of the Salmon River in Idaho for an Endangered plant, the MacFarlane's four o'clock (*Mirabilis macfarlanei*) on May 25, 1983. One new population was found, and several likely habitats for MacFarlane's four o'clock were located for future surveys. This new population is estimated to have 750-1,250 plants. A field trip was also conducted by an entomologist working on MacFarlane's four o'clock to determine the importance of insect relationships with the plant. It was determined that insect studies may be of greater importance than previously thought. Much insect damage was noted. Another new population of 100+ plants was verified on June 17 by Parenti near the Imnaha River, Wallowa County, Oregon.

The cui-ui (*Chasmistes cujus*) spawning run up the lower Truckee River in Nevada began this month. The first documented fish entered the Pyramid Lake Fishway on May 16, and the first fish entered the Marble Bluff Fish Handling Building on May 21. The run rapidly increased to a peak of 928 fish on May 26. By the end of May, over 5,000 cui-ui had passed through the building. The run was still underway as of June 3, but much reduced. So far, this is the second largest run to enter the fish handling building. (The largest run occurred last year with 14,000 fish, while the previous high was in 1980 when 4,500 entered the building.)

This year's spawning run was late. Normally, the run begins during the latter part of April and peaks around the third week of May. Although this year's run was weeks late in beginning, it peaked only 6 days later than last year's run.

Considering that the Truckee River drainage contained a record snow pack and that our early spring surveys of Pyramid Lake indicated that a large mass of cui-ui had assembled near the river's mouth, we had expected an earlier and larger run of cui-ui than has materialized to date. The problem may be the unusually cold spring that accompanied the large snow pack, thereby delaying the snow-melt and creating an unusually high and cold flow in the Truckee River during May. This may have reduced the "desire" of many cui-ui to initiate their run. Those that commenced their run early only ascended the river (or fishway) a short distance before depositing their eggs. For example, we noted a large number of cui-ui in the terminal ladder of the fishway, but did not observe similar masses in the fish handling building. These fish

Continued on page 9

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Rulemaking Actions - June 1983

Flagstaff Pennyroyal Proposed as Threatened

A plant native to northern Arizona, the flagstaff pennyroyal (*Hedeoma diffusum*), has been proposed by the Service for listing as a Threatened species (FR 6/29/83). Habitat destruction has already reduced the plant's population and range, and potential urban development could further jeopardize its chances for survival.

Hedeoma diffusum, a member of the mint family, was first collected in 1883 near Flagstaff, Arizona, and was described by E.L. Green in 1898. It is endemic to the Flagstaff area, and is restricted today to 10 known sites. Habitat for the plant has been reduced by urbanization, and the city is forecast to almost double in population by the year 2000. The remaining habitat could easily be lost through further development or growing recreational pressures on the area. *Hedeoma diffusum* is found on rock outcroppings within mature ponderosa pine (*Pinus ponderosa*) communities, and limited field observations indicate that forest disturbance, for example by silviculture, may be another threat.

Effects of the Rule if Adopted

Although some of the *Hedeoma diffusum* habitat is within the Coconino National Forest, the effects of a listing on the U.S. Forest Service (USFS) and other Federal agencies are expected to be minimal. The USFS regulations governing lands upon which Threatened, Endangered, rare, or unique species occur (36 CFR 261.9) will apply to *Hedeoma diffusum* if the listing is approved. Critical Habitat has not been

proposed at this time since the attractive plant is vulnerable to collection for rock gardens and is usable for herb tea. Publication of Critical Habitat maps would pinpoint the remaining populations, greatly increasing the threats to the plant. Some of the *Hedeoma diffusum* populations are on private lands where taking could not be prohibited. It should be emphasized, however, that even without a formal Critical Habitat determination, all habitat conservation measures authorized in Section 7 of the Endangered Species Act would apply. Federal agencies would be required to insure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of *Hedeoma diffusum* by directly affecting the plant or by modifying its habitat.

U.S. Fish and Wildlife Service Drawing



The Flagstaff pennyroyal is a perennial herb that forms circular, low mats with numerous shoots. The plant's leaves are opposite and very small, and its small blue flowers are borne in clusters of one to three.

All trade prohibitions under Section 9(a)(2) of the Act, as implemented by 50 CFR 17.71, also would apply to *Hedeoma diffusum*, making interstate and international trafficking in this plant illegal. Seeds of cultivated specimens of Threatened plants are exempt from all provisions of 50 CFR 17.61, but *Hedeoma diffusum* is not common in cultivation. With regard to taking, Section 9(a)(2)(B) of the Act, as amended in 1982, makes it unlawful to remove and reduce to possession Endangered plants from areas under Federal jurisdiction. Section 4(d) provides for the application of these prohibitions to Threatened species through regulations, and this provision will apply to *Hedeoma diffusum* once new regulations are developed and permits for excepted actions are provided for. Certain exceptions will apply to Service agents or State conservation agencies, and 50 CFR 17.72 provides for the issuance of permits to carry out otherwise prohibited activities under certain circumstances. It is anticipated, however, that few taking permits for this plant will ever be requested.

Public Comment Requested

Comments on the proposal are requested from all interested individuals, organizations, and agencies, and should be received by the Regional Director, U.S. Fish and Wildlife Service, 500 Gold Avenue, S.W., P.O. Box 1306, Albuquerque, New Mexico 87103, by August 29, 1983. Requests for a public hearing should be received by August 15, 1983.

A Colorado Wild-Buckwheat Proposed With Critical Habitat

The Service proposed to list as Endangered *Eriogonum pelinophilum* (clay-loving wild-buckwheat) and to determine its Critical Habitat (F.R. 6/22/83). Only one population, with 800-1000 individuals, is known. This 100-acre site is on private land in Delta County, Colorado.

All vegetation on the land adjacent to the only known population has been eliminated subsequent to being fenced and used for horse corrals and grazing. The area of the clay-loving wild-buckwheat is under imminent threat of similarly being fenced off and used, probably causing the loss of the species.

Eriogonum pelinophilum was first collected by Harold Gentry in 1958; however, the distinctiveness of his collection was not recognized until Dr. James Reveal conducted an analysis of the species group in the early 1970s. Reveal made repeated searches before he relocated the site from which the plant was

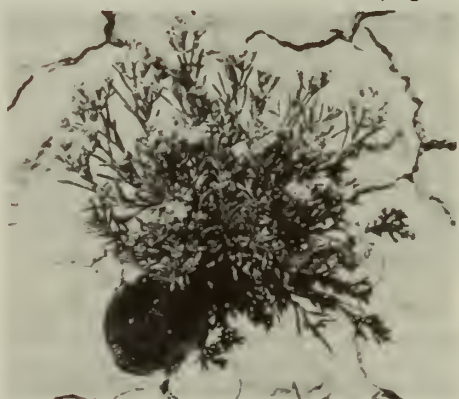
originally collected. The published description of the new species in 1973. Additional locations have not been found despite extensive field searches.

Eriogonum pelinophilum is a low, rounded subshrub only 4 inches high and 4-8 inches wide that bears clusters of small white to cream flowers. It is apparently restricted to a band of whitish soil within the badlands.

If this plant is listed as Endangered, certain conservation authorities would become available and protective measures may be undertaken for it. These would include increased management of the species and its habitat, the possibility of land acquisition if necessary through Section 5 of the Act, the use of Federal and State funds for the species since Colorado has a plant cooperative agreement under Section 6(c)(2) of the Act, and the development of a recovery plan for the species as specified in Section 4(f).

If the species is listed, the Service will also review it to determine whether it should be placed upon the Annex of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, which is implemented

Continued on page 5



Only one population of the clay-loving wild-buckwheat is known to exist.

Rulemaking Actions Continued

Initial Findings on Petitions Announced

Initial findings were published (F.R. 6/14/83) on the substantiality of information for certain petitions received by the Service since February 15, 1983. The 21 species included in the petitions are listed below, along with other information about the petitions.

The Endangered Species Act Amendments of 1982 [Section 4(b)(3)(A)] require that the Service make a finding whether a petition to list, reclassify, or delist a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. To the maximum extent practicable, this finding is to be made within 90 days of receipt of the petition, and the finding promptly published in

the *Federal Register*. When a positive finding is made, the Service is required to promptly begin a review of the status of the species, and to decide within 12 months of petition receipt whether the requested action is warranted in accord with Sections 4(b)(3)(B) or 4(b)(3)(D)(ii) of the Act, as amended.

For the 17 fishes, the alligator snapping turtle, and ferruginous hawk for which findings were made, the required status review began with the December 30, 1982, vertebrate notice of review. For the Schaus swallowtail butterfly, the required status review began with the 5-year notice of review published February 27, 1981. For the southern sea otter, the required status review began with

the 5-year notice of review published September 27, 1982.

The Service is soliciting data concerning the 20 species now under petition for listing and reclassification. Especially sought is information regarding taxonomy, distribution, any recommended Critical Habitat for the native species, and threats. Comments received will be considered in any future actions for the taxa. They should be sent to the Associate Director - Federal Assistance, U.S. Fish and Wildlife Service (OES), Department of the Interior, Washington, D.C. 20240. Findings on petitions received prior to February 15, 1983, were published in the February 15, 1983, *Federal Register*.

Evaluation of Petitions

Species	Action	Petitioner	Date	Substantial Information
Desert dace, <i>Eremichthys acros</i>	List	Desert Fishes Council	4/12/82	Yes
Hutton Spring tui chub, <i>Gila bicolor</i> ssp.	do	do	do	do
Fish Creek Springs tui chub, <i>Gila bicolor euchila</i>	do	do	do	do
Owens tui chub, <i>Gila bicolor snyderi</i>	do	do	do	do
Yaqui chub, <i>Gila purpurea</i>	do	do	do	do
White River spinedace, <i>Lepidomeda albivallis</i>	do	do	do	do
Big Spring spinedace, <i>Lepidomeda mollispinis pratensis</i>	do	do	do	do
Little Colorado spinedace, <i>Lepidomeda vittata</i>	do	do	do	do
Pecos bluntnose shiner, <i>Notropis simus pecosensis</i>	do	do	do	do
Foskett Spring speckled dace, <i>Rhinichthys osculus</i> ssp.	do	do	do	do
Modoc sucker, <i>Catostomus microps</i>	do	do	do	do
Warner sucker, <i>Catostomus warnerensis</i>	do	do	do	do
June sucker, <i>Chasmistes liorus mictus</i>	do	do	do	do
White River springfish, <i>Crenichthys baileyi baileyi</i>	do	do	do	do
Hiko White River springfish, <i>Crenichthys baileyi grandis</i>	do	do	do	do
Railroad Valley springfish, <i>Crenichthys nevadae</i>	do	do	do	do
Desert pupfish, <i>Cyprinodon macularius</i>	do	do	do	do
Schaus swallowtail butterfly, <i>Papilio aristodemus ponceanus</i>	Reclassify	Florida Game and Freshwater Fish Commission	2/23/83	do
Alligator snapping turtle, <i>Macrolemys temmincki</i>	List	Dr. Peter C.H. Pritchard	2/23/83	do
Southern sea otter, <i>Enhydra lutris nereis</i>	Reclassify	Friends of the Sea Otter	5/01/83	do
Ferruginous hawk, <i>Buteo regalis</i>	List	Mr. Thomas Thurow	5/10/83	No

NMFS Publishes Petition Findings

The National Marine Fisheries Service (NMFS) has received several petitions to add certain species to the U.S. List of Endangered and Threatened Wildlife. As required by Section 4 of the Endangered Species Act of 1973, as amended, these findings were recently published (F.R. 6/3/83).

NMFS has determined that petitions concerning the pea crab (*Parapinnixia affinis*); large summer-run steelhead trout (*Salmo gairdneri*), in California; and the monoplacophoran mollusc (*Vema hyalina*) do not present substan-

tial scientific or commercial information indicating that the petitioned actions may be warranted. NMFS will not, therefore, conduct reviews of the status of these species.

NMFS also determined that the petition concerning the Gulf of California harbor porpoise (*Phocoena sinus*), submitted by Defenders of Wildlife, does present substantial scientific information indicating that the petitioned action may be warranted. Therefore, NMFS has begun a review of the status of this species.

To insure that the review of *Phocoena sinus* is comprehensive, NMFS is soliciting information and data concerning its status. All information should be sent by August 2, 1983, to the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C. 20235.

For more details regarding the requirements of Section 4 of the Act and the mandated acknowledgement of petitions, please see the story in this issue regarding petitions submitted to the Fish and Wildlife Service.

Buckwheat

Continued from page 3

through Section 8A(e) of the Act, and whether it should be considered for other appropriate international agreements.

Background

Actions leading to Federal protection for the clay-loving wild-buckwheat began in 1973 with the inclusion of plants in the Endangered Species Act. Section 12 of the 1973 Act directed the Smithsonian Institution to compile a report on endangered, threatened, and extinct plant species. The resulting 1975 report included the clay-loving wild-buckwheat; the report was treated as a petition by the Service, and its main lists published as a notice of review on July 1, 1975. This action was followed on June 16, 1976, by a proposal to list a number of plants, including this wild-buckwheat. One other wild-buckwheat (*Eriogonum gypsophilum*) is listed as a Threatened species, and over 50 other *Eriogonum* are candidates petitioned for listing (January 1981 Bulletin).

Due to subsequent requirements of the 1978 Amendments to the Endangered Species Act, the 1976 proposal was withdrawn. Further amendments in 1982 placed a new deadline of October 13, 1983, on pending petitions; proposal of this species before the deadline satisfies the petition requirement (March 1983 Bulletin). The plant is now repropounded on the basis of confirming field work done with the plant in summer 1981. The same rule proposes Critical Habitat for the first time.

Since the proposed Critical Habitat is on private land, there would be no impact from the designation on fencing or other private actions, because Section 7 of the Act regulates only Federal activities. The Service has prepared a preliminary economic impact analysis. The tentative conclusion of this analysis is that designation of Critical Habitat for the species will have no economic impact on any private persons, businesses, or governmental agencies and that no known Federal activity is ongoing or anticipated that will affect the proposed area. Similarly, taking prohibitions for plants are now limited to areas under Federal jurisdiction.

Comments and materials concerning the proposal to list this plant as Endangered with Critical Habitat should be sent, preferably in triplicate, to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 25486, Denver, Colorado 80225. Comments from the public and the State of Colorado must be received by August 22, 1983. Public hearing requests must be received by August 8, 1983.

Woodland Caribou Proposed as Endangered

The only population of caribou that still regularly occurs in the conterminous United States, sometimes known as the southern Selkirk Mountain herd, has been proposed by the Service for final listing as an Endangered species (F.R. 6/22/83). This very small herd is found only in parts of northeastern Washington, northern Idaho, and southern British Columbia, Canada. Although the population was designated Endangered on January 14, 1983, under the emergency listing authority in Section 4 of the Endangered Species Act, that action was temporary and it expires on September 12, 1983 (see the January 1983 BULLETIN). The proposed final listing would give permanent protection to the herd.

It now appears that the southern Selkirk Mountain population of the woodland caribou (*Rangifer tarandus caribou*) has become the most critically jeopardized mammal in the United States. In recent years, its numbers have declined to 13-20 animals, and the premature loss of a single individual could be disastrous to the herd. Currently, the population is threatened by: (1) logging of old growth forests that bear lichens, the major part of the caribou's winter diet; (2) vehicle collisions along forest roads used by loggers, miners, and recreationists; (3) illegal hunting; and (4) a lack of recruitment from other herds, which may have caused the southern Selkirk Mountain population to suffer ill effects of inbreeding. Among the benefits to the herd of final listing as Endangered would be to augment the caribou conservation measures now being employed by the U.S. Forest Service, ensure that the needs of the caribou and its habitat are considered in

Continued on page 11

CITES NEWS—July 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director - Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director - Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Service Seeks Data on Ginseng Status

The Service has announced its intention to propose findings on the export from this country of American ginseng (*Panax quinquefolius*) taken during the 1983 season (F.R. 6/9/83). The notice requests comments on the guidelines now being used to determine export findings, and current information on the species involved. The notice also requests information on environmental and economic impacts that might result from the findings and information on possible alternative approaches to meeting CITES requirements. All comments must be received by July 11, 1983.

Interested persons should consult the above *Federal Register* for the listing of criteria currently used to determine whether export will be detrimental to the species. Additional criteria used to determine if State programs qualify for export approval are also listed at the same citation.

Until recently, ginseng export findings have been made annually on a State-by-State basis. In 1982, (F.R.

10/4/82), the Service began to make multi-year findings for the export of American ginseng. It issued findings covering the 1982-1984 seasons allowing export from the following States on the grounds that all export criteria had been met: Georgia, Kentucky, Minnesota, North Carolina, Vermont (artificially propagated only), and Virginia. In the same notice, the Service approved export of American ginseng lawfully taken only during the 1982 season for the following States that did not meet all the criteria: Arkansas, Illinois, Indiana, Iowa, Maryland, Ohio, Missouri, Tennessee, West Virginia, and Wisconsin. As announced, States approved for the export of only 1982 harvested ginseng will not be granted further export approval until an acceptable ginseng program is developed.

All correspondence concerning this notice should be sent to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

RECOVERY PLANS APPROVED

California Brown Pelican

Brown pelicans are large, fish eating birds occurring along portions of the coastal United States, Mexico, and various countries south to Brazil and Chile. The California brown pelican (*Pelecanus occidentalis californicus*) can be distinguished from the eastern (U.S.) subspecies (*P. o. carolinensis*) by its larger size and darker hindneck while in breeding plumage. It also lays larger eggs and typically has a bright red gular pouch during the courtship/egg-laying period, coloration rare in the eastern subspecies. The brown pelican in North America declined sharply throughout most of its historical range during the 1950's and 1960's due to habitat modification, disturbance, and, most significantly, environmental contamination in the form of pesticide residues. In 1970, the brown pelican was listed by the Fish and Wildlife Service as an Endangered species. The California subspecies was further protected in 1971 when the California Fish and Game Commission classified it under State law as Endangered.

The California Brown Pelican Recovery Plan, approved February 3, 1983, delineates steps and procedures believed necessary to return the subspecies to a stable, secure status. In part, it acknowledges and incorporates conservation measures that have been in effect since 1970. Although the plan addresses the entire subspecies, it deals primarily with the northern population, referred to in the plan as the Southern California Bight (SCB) population, which has shown the most serious decline. Other populations of the California brown pelican, those nesting in the Gulf of California and along the coast of Baja California, have not suffered the colony-wide reproductive failures experienced by the SCB colonies. The plan does, however, take into account the growing threat of human disturbance to these southern populations. It was written under contract to the Service by Franklin Gress and Daniel W. Anderson, University of California - Davis. (A separate recovery plan for the eastern brown pelican along the Atlantic and Gulf of Mexico Coasts was signed in 1979).

Population Limiting Factors

Throughout its total range, the California brown pelican may number about 55,000-60,000 pairs. The largest breeding group by far is located on islands in the Gulf of California. Colonies on these islands comprise approximately 68 percent of the subspecies' total breeding numbers. The SCB colonies make up about 6 percent since the decline in this population. Brown pelicans in the SCB historically have nested on the islands of

Los Coronados, Todos Santos, and San Martin along the northwestern coast of Baja California, and on several of the Channel Islands off southern California. Among the Channel Islands, nesting has been recorded from the following islands and their outlying islets: Anacapa Island, Santa Barbara Island (including Sutil Island), Santa Cruz Island (including Scorpion Rock), and San Miguel Island (including Prince Island), which now are all part of the Channel Islands National Park. Anacapa and Los Coronados historically have had the largest and most consistent brown pelican colonies in the SCB.

Nesting habitat varies throughout the range of the California brown pelican, and the birds use whatever vegetation is available for nest building. They are colonial nesters, and require nesting grounds that are free from mammalian predators and human disturbance. Destruction of nesting habitat within the SCB is not a major problem at this time since the Channel Islands and Los Coronados remain essentially natural; however, there is currently little formal protection for most colonies on the islands along northwestern Baja California. Some islands in the Gulf of California are designated refuges, but better protective enforcement is needed.



Photo by Franklin Gress

Throughout its total range, the California brown pelican may number about 55,000-60,000 pairs.

Offshore habitat in a zone within 30-50 kilometers of a colony site is essential for brown pelicans. Like most seabirds, pelicans are dependent on nearby food resources, especially during the breeding season. The concept of offshore sanctuaries for seabird colonies is becoming increasingly more important with the rapid use and development of coastal zones. Human activities poten-

tially detrimental to seabirds include net fishing, petroleum development, dredging, contaminant discharge, and shipping and air traffic. Sanctuaries could provide a buffer zone around colony sites, but would not give complete protection to the mobile food sources. Essential brown pelican habitat also includes roosting and loafing areas. Unfortunately, many of these are being lost or are becoming subject to increasing human disturbance. Estuarine habitat, which includes roosts for pelicans, is extremely reduced along the California coast. Less than 20 percent of the original salt marshes along the California coast are left.

In 1968, the Smithsonian Institution Pacific Ocean Biological Survey Program conducted a survey of seabirds breeding on the Channel Islands and Los Coronados, and found pelicans breeding only on West Anacapa Island. No nesting was observed on the other islands. Not only had the numbers drastically declined, but there also was lower reproductive success. Studies the following year found the colony site littered with thin, broken eggshells. Chemical analyses of the egg contents revealed high concentrations of DDT compounds, particularly the principal isomer DDE. The primary reason for the decline in the California brown pelican was shown to be the nearly total reproductive failure (in the SCB colonies only) caused by excessive thinning of eggshells, a physiological response to high DDT levels in the late 1960's and early 1970's. In fact, levels of DDT compounds in the southern California marine environment were among the highest recorded for any coastal ecosystem worldwide.

Although the introduction of DDT compounds into the SCB decreased dramatically after 1970, depressed productivity from eggshell thinning continued through at least 1974. The ecological effects of DDT contamination are now stabilized from an acute to a chronic, low level; incidences of eggshell thinning also still occur, and complete recovery of reproductive potential has not yet occurred in the SCB.

The plan states that, since 1974, food availability has been the most important limiting factor influencing pelican breeding success. Studies of the SCB pelicans' prey base show the birds currently to be almost entirely dependent on the northern anchovy (*Engraulis mordax*), and fluctuations in pelican productivity have been associated with anchovy availability and/or abundance. Therefore, commercial anchovy harvests have the potential to affect the population dynamics of the pelican. So far, the commercial fishery has had little impact on the SCB pelican population. But increased taking of anchovies could

have an effect on pelican recovery. Close coordination is needed between fishery and wildlife management agencies to monitor the situation as it develops.

Historically, the California brown pelican may have had a wider prey base than today and switched to the anchovy when its primary prey became unavailable. For example, the Pacific sardine (*Sardinops sagax*), formerly abundant in the SCB, probably was an important prey species to the pelican until the fish greatly declined along the California coast. The remaining sardine population should be monitored for the possibility that it could recover in the future and help give the pelican a wider, more stable prey base.

The Santa Barbara Channel is a site of offshore petroleum drilling, and the hazards to wildlife of this activity are well documented. Petroleum activity in the SCB has increased over the years. Offshore tracts near Anacapa Island are being offered for bid, posing a potential threat to the island's important brown pelican colony.

Recovery Actions

The primary objective of the recovery plan is to maintain stable, self-sustaining populations throughout the subspecies' range in both Mexico and California. This goal will include the

Continued on page 8

Copies of these plans, and all approved recovery plans, will be made available for purchase from the Fish and Wildlife Reference Service, Unit j, 3840 York Street, Denver, Colorado 80205-3536 (800/525-3426). A 4-to-6 month printing time must be allowed following the date a recovery plan is approved by the Director, before copies may be available. A delay should be expected when ordering newly approved plans.

Yuma Clapper Rail

The Yuma clapper rail (*Rallus longirostris yumanensis*) breeds in marshes along the Colorado River from the Nevada/California border south to the Colorado Delta region of Mexico. Results of surveys between 1969 and 1981 indicate that the subspecies is fairly stable at about 1,700 to 2,000 birds.

On February 4, 1983, the Service approved the Yuma Clapper Rail Recovery Plan. Its purpose is to provide natural resources management agencies and conservation groups with background information on the subspecies, and to point out new or ongoing tasks needed to achieve eventual Federal delisting.

The rail was listed as Endangered in 1967, when little published information was available on the bird. For at least the past 12 years, prior to recent flooding along the Colorado River, the rail's breeding population in the United States was believed to be stable. The recovery plan recommends that the bird be considered for reclassification.

However, due to extreme flood conditions along the Colorado River, no action will be taken to reclassify the Yuma clapper rail until its status is reassessed. Rail reproduction was probably seriously impaired by runoffs along the Colorado River during the late spring and early summer of this year. The magnitude of the runoffs was nearly three times the normal water flow.

The Yuma clapper rail breeds in freshwater marshes in the United States as well as in brackish waters of Mexico, and the bulk of the birds probably winter in salt and brackish waters in Mexico. It is believed that originally the subspecies was not distributed along the Colorado River, but that it expanded its range northward with the creation of suitable marsh habitat associated with dam development. (Regulated water releases

in the lower Colorado River slowed and stabilized river flow sufficiently to allow sedimentation and the development of cattail (*Typha latifolia*) and bulrush (*Scirpus acutus*) marshes.

A top priority on the list of recovery actions is to determine where the rail winters and to determine any possible



Photo by Roy E. Tomlinson,
U.S. Fish and Wildlife Service

Little is known about the migratory behavior of the Yuma clapper rail.

threats to that habitat. Although it is not known for sure, most rail authorities believe that the subspecies winters from the Delta southward along the coast of Mexico. Other recovery objectives include the development of management plans for Federal and State controlled breeding areas, as well as written agreements to protect wintering and breeding habitat, with U.S. and Mexican agencies having responsibility for this clapper rail and its habitat.

Copies of the Yuma Clapper Rail Recovery Plan are available from the Fish and Wildlife Reference Service. For more information on the plan, contact the Albuquerque Regional Director (see page 2 for address).

Tennessee Coneflower



The greatest threat to the survival of the Tennessee coneflower is habitat destruction.

The Tennessee Coneflower Recovery Plan, approved by the Service on February 14, 1983, cites habitat destruction as the greatest threat to the survival of *Echinacea tennesseensis*. Only five populations of the plant are known, all located within 14 miles of one another in Davidson, Rutherford, and Wilson Counties, Tennessee.

The number of plants in each of the five extant populations varies from one to hundreds; one of the populations includes two separate colonies of the plant. About half of the colonies are on public land administered by the Tennessee Department of Conservation.

Historical records exist of additional colonies within the same general area; two colonies were found in Davidson County in 1972, but both were destroyed

by housing developments before the locations were revisited in 1975. A Rutherford County site was destroyed between 1967 and 1976. Several of the extant populations that are privately owned are similarly threatened by rapidly spreading development.

All of the known natural colonies, past and present, are on cedar glades areas where the limestone bedrock is exposed or covered by a very thin layer of soil. Plants living in this harsh dry environment have evolved special adaptations to overcome the effect of extremes in light, temperature, and moisture that are typical of the cedar glades. Recent research suggests that certain environmental and genetic factors that might be impeding the coneflower's growth and reproduction. Basic ecological research still needs to be done on the plant.

Continued on page 8

Foreign Reptiles

Continued from page 1

also noted that the iguana had been released in Puerto Rico.

Whether a species will immediately benefit from Federal listing is not a criterion for listing; hence, the Service believes that listing the Serpent Island gecko, Round Island skink, and Lar Valley viper is justified. In addition, the fact that many species in trouble in the wild survive well in captivity does not take away the need for protection in the wild. This rule does not apply to the iguana population in Puerto Rico, since it is not native to that country, but resulted from

the accidental release of zoo animals at La Paraguera.

Both Mr. Schmitt and Mr. Hugh Quinn questioned the listing of the Aruba Island rattlesnake, on the basis that listing would inhibit captive breeding and the development of a species survival plan and regional studbook under the auspices of the AAZPA. However, one of the purposes of listing is to encourage captive propagation if for conservation purposes, and many such programs are underway for a wide variety of species on the U.S. List of Endangered and Threatened Wildlife and Plants. Rather than inhibiting conservation, listing should encourage the development of a

species survival plan and studbook.

Sections 8(a), (b), and (c) of the Act authorize, in part, financial assistance to encourage foreign programs, and to provide assistance in the form of personnel or training of personnel, in order to promote the conservation of listed species that are not native to the U.S. Under this provision, the Service has assisted cooperative research activities on listed species in a number of localities, including Mexico and Ecuador. It is possible that a conservation plan for the Aruba Island rattlesnake could be developed in cooperation with authorities in the Netherlands Antilles. The Service believes that the biological data warrant listing of the rattlesnake as proposed.

Coneflower

Continued from page 7

All of the known coneflower localities have been affected to some degree by man's activities, including grazing and mowing. The exact impact of these activities is not documented beyond casual observation. It is known, however, that the coneflower can survive these practices to a limited degree, and that the plant is probably enhanced by some types of disturbance. A horticultural demand for the coneflower could develop in the future, as a result of its recognition as a rare species. This could become a serious threat to natural populations if other sources of seed are not developed.

The Tennessee Coneflower Recovery Plan was prepared by the Tennessee Coneflower Recovery Team. The overall goal of the recovery plan is to establish five secure wild populations of the coneflower, each with three self-sustaining colonies. (A colony will be considered self-sustaining when there are two juvenile plants for every flowering one.)

To achieve this goal, the recovery plan calls for the preparation and implementation of management plans for the population sites. In addition, it calls for systematic searches for new colonies, protection plans for each known colony, a system for providing seed for experimental colonies that will not disturb natural populations, the establishment of new colonies, and public education projects.

The recovery plan recommends that research on the coneflower be done by experimenting with management techniques on newly established colonies (not on existing natural colonies). Activities recommended in the plan include experimental burns, test grazing, and removal of competing plant taxa. Since the plan was completed, the Tennessee Department of Conservation has seeded three sites on state-owned land in order to establish new colonies.

Propagation work on the coneflower was begun by Dr. Robert Farmer at the

Tennessee Valley Authority (TVA) in 1978. About 500-1,000 plants now growing at the TVA nursery were started from seeds taken from the wild. A number of juvenile plants (1-2 years old) were transferred from TVA's nursery to Cheekwood Botanic Garden and the Warner Nature Center, both in Nashville. TVA's program was terminated in 1980, and the remaining plants may also need to be transferred.

A number of private landowners have obtained seeds and are successfully growing the plant in their home gardens. The Tennessee Native Plants Society has dispensed some seeds through its seed exchange program. Members of the Hobby Greenhouse Association have begun assisting with the propagation of the coneflower as a part of their

Continued on page 12

Brown Pelican

Continued from page 7

assurance of long-term protection of adequate food supplies and essential nesting, roosting, and offshore habitat. The involvement of Mexico in the recovery program is emphasized; the plan calls for a joint FWS/Fauna Silvestre (Mexico's wildlife agency) management plan to protect the pelican population and habitat in the Mexican portion of the bird's range, as well as an expanded research and public education effort.

In the SCB, human disturbance at important nesting colony sites would be minimized by continuing the access restrictions at West Anacapa Island and increasing offshore habitat conservation. Formal protection would be extended to Scorpion Rock. Control over air and sea traffic near Anacapa Island also is advocated under the plan. In addition to nesting areas, roosting sites require special attention. To conserve the pelican's food supply, the National Marine Fisheries Service is considering the needs of the brown pelican and other wildlife in establishing new harvest quotas in a proposed major amendment to the Anchovy Fishery

Management Plan. While these measures are being carried out, the remaining effects of disturbance, anchovy fishing, pesticide contamination, oil development, and other relevant factors will be monitored and the success of the recovery program continuously evaluated.

Copies of the California Brown Pelican Recovery Plan will be available from the Fish and Wildlife Reference Service. Details on the plan and its implementation can be obtained from the Portland Regional Director (see page 2 for address).

First Known Female California Condor in Captivity

The future of the California condor (*Gymnogyps californianus*) captive propagation program received a big boost recently when blood tests revealed that the second of the four chicks hatched this spring at the San Diego Zoo is a female. This is the only known female California condor in captivity. As of July 6, only the first two chicks hatched at the zoo had been tested, and the remaining two were scheduled for testing soon. All four young birds are doing very well and are gaining weight. The age at which California condors begin breeding is not known, but is estimated at about 6-10 years. Condor biologists hope to be able to breed the birds in captivity for future release of their young into the wild.

There is more good news: another condor chick hatched in the wild on July 1. It is being well cared for by its natural parents and appears to be vigorous. The chick hatched from the pair's third egg of the season. (Their first egg was taken to the San Diego Zoo, where it hatched, and the second was broken during incubation by the adults.) This brings the known hatching success for this year to four at the San Diego Zoo and two in the wild.

Regional Briefs

Continued from page 2

simply did not continue up the 3-mile fishway to the handling building.

Project personnel are continuing to monitor spawning behavior and success of those fish that were passed up-stream of Marble Bluff Dam. About 30 fish are being tracked by radio-tag transmissions to locate their spawning sites. Once their sites are found, the depth and velocity characteristics of the water will be measured. Hatching success will be monitored by collecting out-migrating larvae in plankton nets.

Region 2—The Mexican Government recently donated 2,000 eggs and 20 hatchlings of the Endangered Kemp's ridley sea turtle (*Lepidochelys kempii*) to the U.S. Government. The eggs and hatchlings were then transferred to Padre Island National Seashore in Texas for the 5th year of a 10-year project. Last year's hatchlings were released by the National Marine Fisheries Service last month in the Gulf of Mexico off Padre Island. Over 50 have now been recovered after they washed up on the beach with lumps of tar lodged in their mouths and gullets. A few of the stranded turtles were dead, but most have been cleaned up and re-released. Work is underway to evaluate this newly discovered threat.

This year's severe flooding along the Colorado River will probably be a disaster for Yuma clapper rail (*Rallus longirostris yumanensis*) production. Normal flows of 17,000 cubic feet per second (cfs) have been replaced by flows of around 40,000 cfs. The peak nesting season for Yuma clapper rails usually occurs during the last half of June. In all likelihood, eggs and young will be lost. The amount of damage to the rail population cannot be determined until next spring.

This spring's peregrine falcon (*Falco peregrinus*) trapping effort on Padre Island, Texas, was especially successful for Ken Riddle and his crew, as 135 peregrines were caught. (The same level of effort last spring yielded only 93 peregrines.) This spring's catch consisted of 93 adult females, 8 adult males, 30 second-year females, and 4 second-year males. Twenty-one of the 135 birds were recaptures. One recovery this spring was from the Colville River, Alaska, where the bird was banded as a nestling last summer.

The bald eagle (*Haliaeetus leucocephalus*) population on the Salt and Verde Rivers in Arizona had another productive breeding season—13 young fledged from 7 nests this year. This is comparable to the 14 young produced in 1981 and 1982. There was a record number of nesting attempts this year (12), with at least 23 eggs laid and 17 young hatched.

Of special interest in the Arizona bald eagle population this year was an instance of mate replacement during the incubation period at one nest site. Following 3 weeks of normal incubation by both adults, one bird, presumably the male, disappeared. A banded subadult bald eagle appeared in the vicinity the next day. The female continued to incubate without interruption for 6 consecutive days. On the 7th day, and each day thereafter, she left the nest unattended during the afternoon for up to an hour, presumably to forage. The male occasionally flew to the nest, sometimes with a fish, only to be rebuffed by the incubating female. Finally, 2 weeks after his first appearance and at the time of hatching, the male took over nest-tending duties for the first time during the female's absence. Three young were later fledged from this site. Nine have fledged from this territory during the past 3 years, making it the most productive bald eagle site in the Southwest. The foregoing observations confirm the existence of nonbreeding subadult/adults in the population and indicate bald eagles can establish a new pair bond within a 2-week period.

Region 3—A meeting was held recently with various conservation organizations and Federal and State agencies on initiating a study of public attitudes about the eastern timber wolf (*Canis lupus lycaon*) in Minnesota . . . A presentation on endangered species was given at a meeting hosted by the Minnesota Chapter of the Society of American Foresters . . . Iowa and Wisconsin both recently passed tax check-off programs for non-game wildlife . . . Planting of jack pines (*Pinus banksiana*) for the Kirtland's warbler (*Dendroica kirtlandii*) is going well with the excellent weather. These Endangered birds nest only in the lower peninsula of Michigan in immature jack pine stands. The warbler census is complete with 213 singing males . . . A population of Iowa Pleistocene snails (*Discus macclintocki*) has been located in Illinois. A survey for the snail is going on in Wisconsin, and Iowa will be conducting a survey with Section 6 cooperative funds . . . Four new Illinois mud turtles (*Kinosternon flavescens spooneri*) have been reported from a site located last year in Illinois . . . Six eastern timber wolves in northern Wisconsin have been fitted with radio collars, and the State is entering into an agreement with Michigan to study the wolf along their common border.

Region 4—A survey of potential habitat for the paleback darter (*Etheostoma pallididorsum*) during its spawning season located two additional spawning sites. Young-of-the-year darters were observed at a third location, but the

spawning site could not be identified. This candidate species spawns in spring seeps and flooded pastures. Prior to this survey, only one spawning site was known. This darter occurs in the Caddo River in Montgomery County and in a small tributary of the Ouachita River in Garland County, both in Arkansas. Additional surveys are planned for this summer in our status review of the paleback darter.

The National Audubon Society's research center in Tavernier, Florida, informed the Service that its preliminary census of wood stork (*Mycteria americana*) nesting in Florida and Georgia located about 3650 pairs nesting in 21 Florida and 2 Georgia rookeries.

Region 5—During June, two trips were made to pick up bald eagles from Canada, where the birds are more numerous, for translocation to the United States. First, Paul Nickerson and Clyde Bolin went to the Cape Breton area of Nova Scotia and received four eaglets taken by biologists and climbers of the Provincial Wildlife Division, Department of Lands and Forests. These young birds were then flown to New Jersey for restocking into the wild. Later, Nickerson and a crew from the Pennsylvania Game Commission traveled to Saskatchewan where 12 eaglets were taken for relocation in Pennsylvania. This was a joint project of the FWS, State of Pennsylvania, and Saskatchewan Department of Tourism and Natural Resources (Wildlife Branch). The cooperation and hospitality of the Canadians was outstanding.

The Furbish Lousewort Recovery Plan was signed in June by the Regional Director.

Region 6—A total of two juvenile Wyoming toads (*Bufo hemiophrys baxteri*) have now been found in the Laramie Basin. The toads, which will measure less than 2 inches long as adults, are now being held at the University of Wyoming facility in Laramie. Wyoming received \$10,000 in Section 6 funds earlier this year to conduct surveys for the toad. The Wyoming Game and Fish Department, the University of Wyoming, and the FWS began searching in June but failed to turn up any adult toads. The search was discontinued due to the end of breeding season, which is the only period when adults are calling and can be detected. The Wyoming toad, a subspecies related to the Canadian toad, is known only from an area in Albany County, Wyoming. By 1979, the subspecies was extremely rare. No adults have been seen or heard since 1981. The Wyoming toad has been proposed for listing as Endangered.

The Colorado River Fishes Recovery Team met June 21-23 in Las Vegas, Nev-

Continued on page 11

Conservation Agreement Signed for Spring Pygmy Sunfish

by John Pulliam III,
Jackson Endangered Species Office

More than 5 years of effort have finally culminated in the protection of the spring pygmy sunfish (*Elassoma* sp.) by the signing of a Conservation Agreement (CA) among the J. F. McDonald Estate, Lowe Farms, the Alabama Department of Conservation and Natural Resources, and the Fish and Wildlife Service (FWS). The CA basically provides for (1) maintaining of the integrity of the Beaverdam-Moss Spring and Swamp Complex; (2) implementing soil conservation measures to reduce the likelihood of excessive silt, pesticides, or other pollutants from entering the spring; (3) conferring with FWS before initiating any habitat modification; (4) implementing management actions which may become necessary; and (5) monitoring the population status and confirming the agreement annually.

The spring pygmy sunfish was discovered by Tennessee Valley Authority biologists in 1937 in Cave Spring, Lauderdale County, Alabama. This spring later was inundated by Pickwick Lake. In 1941, the sunfish was collected in Pryor Spring in Limestone County, but this population also was subsequently extirpated. Dr. David Etnier discovered still another population in the Beaverdam-

Moss Spring and Swamp Complex in 1973.

The spring pygmy sunfish was proposed for listing as an Endangered species with Critical Habitat on November 29, 1977, and a public hearing was held in Birmingham, Alabama, on March 15, 1978. A reproposal of Critical Habitat was published on July 27, 1979, to comply with new requirements established by the 1978 Amendments to the Endangered Species Act, and a public hearing on this reproposal was held on August 29, 1979. The proposal to list the spring pygmy sunfish was withdrawn on November 29, 1979, because the rule was not completed within 2 years of the proposal (as required by the 1978 Amendments).

The threats to the spring pygmy sunfish outlined in the original proposal were pollution and siltation. A meeting was subsequently held with the FWS, Agricultural Stabilization Conservation Service, Soil Conservation Service, County Extension Agent, Alabama Game and Fish Division, and the two landowners to address the threats to the spring pygmy sunfish. Since the spring pygmy sunfish has survived under existing land use practices, it seemed logical that maintaining the integrity of the Beaverdam-Moss Spring and Swamp

Complex and implementing soil conservation measures to reduce the likelihood of excessive siltation or pesticide runoff would protect the species. Mr. Albert McDonald, the primary landowner, had already instituted land treatment measures, approved by the Limestone County Soil and Water Conservation District, that would reduce erosion to less than the amount of soil replaced naturally.

During development of the draft CA and review by the cosignatories, a "Conservation Agreement for Candidate Species-Final Policy and Guidelines" was signed by the FWS Associate Director - Federal Assistance on January 3, 1983. The final signature on the Spring Pygmy Sunfish Conservation Agreement, which complies with the above policy, was obtained on April 13, 1983.

On April 19, we conducted the first annual survey of the spring pygmy sunfish population in the Beaverdam-Moss Spring and Swamp Complex. We found a healthy population in good reproductive condition. We have already contacted Mr. Luke Pryor, owner of Pryor Spring, regarding a possible reintroduction of spring pygmy sunfish. He has been very cooperative, and is interested in helping with the project. In addition, we are in the process of identifying at least one other location for a possible reintroduction. We believe that the maintenance of at least three separate populations of the spring pygmy sunfish would provide sufficient protection to ensure survival of the species.

Louisiana Prairie Vole Thought to be Extinct

According to a recent status survey by the Louisiana Cooperative Wildlife Research Unit, (LCWRU) the Louisiana prairie vole (*Microtus ochrogaster ludovicianus*) apparently is extinct.

The Louisiana prairie vole was discovered in 1899 by Vernon Bailey close to Iowa, Louisiana, in Calcasieu Parish. In 1905, he recorded a specimen taken by Ned Hollister at Sour Lake in Hardin County, Texas, but the species has not been seen since then. The late Dr. George H. Lowery and his students at Louisiana State University set thousands of traps beginning in 1934, and Dr. James D. Lane at McNeese State University estimates 10,000 trap-nights in the area where the vole had been captured—all to no avail. In July 1982, the Service's Jackson Endangered Species Field Office requested the LCWRU to conduct a status survey on the vole. The unit's report, dated February 10, 1983, stated that no Louisiana prairie voles were captured after 11,097 trap-nights.

The extirpation of the Louisiana prairie vole evidently is due to changes in habitat from prairie to rice fields, pine forests, or small shrubs and woody vegetation. Its demise may also have been hastened by competition from hispid cotton rats (*Sigmodon hispidus*), which were not collected by Bailey. Based on the current status information, the Service will take no further action at this time on the Louisiana prairie vole, which had been considered a candidate for listing.

Interagency

Continued from page 1

the process has been amended by law in 1978, 1979, and 1982. The most recent revisions are in accordance with the Endangered Species Act Amendments of 1982, which offer more flexibility in the consultation process, including more participation by permit or license applicants. The 1978 and 1979 changes already have been implemented informally for the most part. These proposed rules would incorporate the changes required by the 1982 Amendments and fully explain all the provisions of Section 7. One new provision in the 1982 Amendments allows prospective license

or permit applicants to request consultation, through the consulting agency, earlier in the course of their planning so that potential conflicts can more readily be avoided. Applicants must be notified if a 60-day extension in the consultation process is needed, and extensions longer than 60 days now require the applicants' consent. Another change added a provision that allows limited incidental take, but only under specific conditions. Such taking would be allowed only in accordance with "reasonable and prudent" measures designed to minimize the take. These and other changes are detailed in the June 29, 1983, *Federal Register* notice. The time-frames for the Section 7 exemption process also were shortened significantly by the 1982 Amendments, and revised exemption regulations will be proposed shortly.

Public Comment Requested

Comments on the proposed rules are requested from all interested individuals, agencies, and organizations, and should be addressed to the Director, U.S. Fish and Wildlife Service, Office of Endangered Species, Washington, D.C. 20240. The comment deadline has been extended to August 29, 1983.

Interagency Grizzly Bear Committee Formed

An agreement has been reached between the U.S. Departments of Interior and Agriculture aimed at improving the chances for survival of the Threatened grizzly bear (*Ursus arctos horribilis*). The agencies agreed that the most pressing need for achieving the communication and coordination required for recovery was to restructure the existing Grizzly Bear Steering Committee, which focused only on research in the Yellowstone Ecosystem. The concept of an Interagency Grizzly Bear Committee (IGBC) was developed between both Departments and resulted in a Memorandum of Understanding setting forth the basic premise of the IGBC and its subcommittees. The IGBC will coordinate research, management, and funding for grizzlies in the lower 48 States, and will make recommendations to Federal agencies and State governors on efforts to protect these animals. The basis for action of the IGBC will be the Grizzly Bear Recovery Plan. The IGBC will be headed by top level managers who can ensure that necessary actions

are implemented. Members include Regional Directors of the U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS), three Regional Foresters of the USDA's Forest Service, and one representative each from Idaho, Montana, and Wyoming.

The first meeting of the Interagency Grizzly Bear Committee was held in Denver on June 13, 1983. In addition to regular committee members, other officials from the FWS and NPS attended, along with representatives from the State of Washington and the Audubon Society. The meeting emphasized the responsibilities and organizational structure of the new committee and its four subcommittees, which include: the Yellowstone Ecosystem Management Subcommittee, the Northern Continental Divide Ecosystem Management Subcommittee, the Northwestern Ecosystems Management Subcommittee, and the Research Subcommittee.

Responsibilities of the IGBC are to implement the Grizzly Bear Recovery Plan, guide and plan research, make

recommendations to Federal agencies and States, review and approve actions approved by the subcommittees, and provide for implementation of approved actions through necessary funding. The three management subcommittees will be responsible for proposing management actions necessary for grizzly recovery, implementing approved management actions, establishing teams to implement recovery actions (such as law enforcement teams), and identifying and submitting research needs to the Interagency Grizzly Bear Committee. Interim chairmen have been appointed for the three subcommittees. Chris Servheen, Grizzly Bear Recovery Coordinator, was appointed Chairman of the Research Subcommittee, which will identify and propose necessary research to the IGBC for approval, coordinate and direct approved research, interpret research findings, and review and develop research projects. The next meeting of the Interagency Grizzly Bear Committee is scheduled for August 17, 1983, in Denver.

Caribou

Continued from page 5

Federal land-use planning, and strengthen law enforcement authority. Critical Habitat was not included in the proposal because publishing maps could make the herd more vulnerable to poachers; however, the habitat of the herd will still receive protection under Section 7 of the Act.

Comments on the proposed listing are invited from all interested agencies, organizations, and individuals, and should be received by August 22, 1983, by the Regional Director, Region 1 (see page 2 of the BULLETIN for address). Public hearing requests should be received by August 8, 1983.

Regional Briefs

Continued from page 9

ada. The main purpose of the meeting was to work on revising the existing recovery plans for the Colorado River squawfish (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and bonytail chub (*Gila elegans*). Other major items discussed included the draft Conservation Plan Proposal for the Upper Basin, coordination of squawfish tagging efforts, and development of a management plan for the Lower Basin.

The Black-footed Ferret Recovery Team met on June 20 in Rapid City, South Dakota. All team members, including the five newly appointed individuals, were present. The main purpose of the meeting was to work on a revision

of the existing recovery plan. Assignments were made to the individual team members, and a target date for the initial draft was set at August 1. The team will also work to set up a 1-day information workshop, possibly next year, for the exchange of current information related to the black-footed ferret (*Mustela nigripes*).

Region 7—Three current Aleutian Canada goose (*Branta canadensis leucopareia*) recovery activities in the Aleutian Islands are yielding encouraging results. Control of Arctic foxes (*Alopex lagopus*) on Amukta Island (a future Aleutian Canada goose release site) is proceeding; about 50 foxes were removed as of June 30, and control measures will continue through summer. A spring survey of Agattu Island and Nizki-Alaid Islands for returning captive-raised birds and transplanted birds from Buldir Island resulted in 25 geese observed, 16 on Agattu and 9 on Nizki-Alaid. Some appeared to be paired, but no nests were located. An additional survey will be conducted on Agattu during the trap-transplant activities in late July and August to determine if any nesting occurred this year.

The most exciting data came from Chagulak Island. Last year, an FWS marine bird survey crew discovered approximately 60 "Aleutian-like" geese on the island but, due to inclement weather, observations were limited. This month, with the aid of good weather, a team of biologists spent several days on the island and recorded approximately 75 geese. Metal bands were observed on

five of the birds, and a red leg-band was seen on one. These data indicate that the population indeed consists of Aleutian Canada geese and that at least some of the geese winter with the Buldir flock in the California wintering area.

NEW PUBLICATIONS

Walker's *Mammals of the World*, 4th edition, by Ronald M. Nowak and John L. Paradiso, 1983, is now available. This two-volume work covers more than 1,000 genera of mammals and over 4,000 different species. Copies can be purchased for \$65.00 from the Johns Hopkins University Press, Baltimore, Maryland 21218.

Plant Extinction: A Global Crisis by Harold Koopowitz and Hilary Kaye, 1983, is available for \$16.95 (\$21.95 Canada) from Stackpole Books, Cameron and Keller Streets, Harrisburg, Pennsylvania 17105. *Vanishing Fishes of North America* by R. Dana Ono, James D. Williams, and Anne Wagner, 1983, is available from the same address for \$27.50 (\$34.95 Canada). Both books were published by Stone Wall Press, Inc., 1241 30th Street, N.W., Washington, D.C. 20007.

Genetics and Conservation: A Reference for Managing Wild Animals and Plant Populations by Christine M. Schonewald-Cox, Steven M. Chambers,

Continued on page 12

New Publications

Continued from page 11

Bruce MacBryde, and Larry Thomas, 1983, is now available for \$24.95. Copies can be ordered from Addison-Wesley Publishing Company, Inc., Advanced Book Program/World Science Division, Reading, Pennsylvania 01867.

New Jersey's Endangered and Threatened Plants and Animals, the proceedings of the Second Symposium on Endangered and Threatened Plants and Animals of New Jersey held in 1981, is now available for \$8.00. The work was edited by William J. Cromartie and can be ordered from Office of Conferences and Seminars, Stockton State College, Pomona, New Jersey 08240.

The Second part of the *Atlas of the Rare Vascular Plants of Ontario*, edited by G.W. Argus and D.J. White, was published in July 1983 by the National Museum of Natural Sciences. It is available free-of-charge from: The Rare and Endangered Plants Project, Botany Division, National Museum of Natural Sciences, Ottawa, Ontario K1A 0M8. The recipients of Part 1 of the Atlas will automatically be sent this and subsequent parts.

Reprints of an article, "Record Dispersal by a Wolf From Minnesota," by Steven H. Fritts, published in the *Journal of Mammalogy*, 64(1):166-167, 1983, are available. Single copies may be requested by writing the U.S. Fish and Wildlife Service, North Central Forest Experiment Station, 19992 Falwell Avenue, St. Paul, Minnesota 55108.

The *Recovery Plan for the Hawaiian Monk Seal*, *Monachus schauinslandi*, by William G. Gilmartin, 1983, is now available. Copies of the plan may be obtained by writing to either: Regional Director, Southwest Region, National Marine Fisheries Service, 300 South Ferry Street, Terminal Island, California 90731

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	18
Birds	52	14	144	3	0	0	213	33
Reptiles	8	6	60	8	4	12	98	6
Amphibians	5	0	8	3	0	0	16	2
Fishes	29	4	11	12	0	0	56	22
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	8
TOTAL	199	44	449	48	7	36	783	98**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of species currently proposed for listing: 20 animals
10 plants

Number of Critical Habitats determined: 55
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 92
Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

June 30, 1983

or Administrator, Western Pacific Program Office, National Marine Fisheries Service, P.O. Box 3830, Honolulu, Hawaii 96812.

The *Liaison Conservation Directory for Endangered and Threatened Species* has been updated (May 1983) and published. This directory lists Federal, State-Territorial, private organization, and independent contacts who are cooperating in the U.S. Endangered Species Program. All persons listed in the directory will receive a copy. Others may purchase the directory from the Government Printing Office, Washington, D.C. 20402 (stock number 024-010-00642-1).

Coneflower

Continued from page 8

general volunteer effort to help conserve endangered species. Propagation and transplantation efforts such as these will help make plants available for reintroductions and public education programs as well as satisfying horticultural demands.

Copies of the Tennessee Coneflower Recovery Plan are available from the Fish and Wildlife Reference Service. For more information on this plan contact the Atlanta Regional Director (see page 2 for address).

JULY 1983

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

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Endangered Species Program, Washington, D.C. 20240

SEP 16 1983

Service Proposes Seven Plants As Endangered

The Service has proposed during the past month to add seven more plants to the U.S. List of Endangered and Threatened Plants. This brings the total number of plants currently proposed for listing under the Act to 17. An account of each of the newly proposed species follows:

Arizona Cliffrose

The *Cowania subintegra* (Arizona cliffrose), an endemic to Arizona, has been proposed as an Endangered species (F.R. 7/15/83). Only two widely separated populations of the cliffrose are known to exist, and both are subject to cattle grazing. One population could be additionally impacted by mining and highway maintenance.

The plant was first collected by Danon and Crooks in 1928, and described by Kearney in 1943. The first population discovered was the extant Burro Creek population in southeastern Mohave County. The second known population is in Graham County.

Cowania subintegra is an evergreen shrub reaching 75 centimeters in height that has rose-like yellow flowers. It grows in shallow gravelly loams over limestone bedrock. This plant, and other limestone endemics, is valuable in the

study of the biogeography and evolution of Southwestern flora.

At present, the Bureau of Land Management (BLM) holds nine mining claims in the area of the Burro Creek population, but it is not known to what extent the mineral resources of the area will be developed. Areas within the population have been bladed, destroying habitat, apparently to expose sub-surface formations for mineral exploration.

A graded road and a portion of the Mohave-El Paso Natural Gas pipeline pass through the Burro Creek populations. Maintenance work for both involves occasional blading that prevents any plant establishment in these areas. Some habitat destruction happened during construction of a high voltage power line through the Burro Creek population. A high line pole storage area in the same vicinity effectively removes that space from habitation by the plant.

A portion of the Graham County population occurs on the U.S. Highway 70 right-of-way, on top of a hill through which the highway cuts. Widening of the highway would be the greatest threat to *Cowania subintegra*. Herbicides sprayed on top of the hill (8-20 feet above the road) could also harm the

plants. Current maintenance procedures do not threaten the *Cowania* or its habitat, and there are no plans to widen the highway.

There is no evidence of *Cowania* reproduction except in the Graham County population on the U.S. 70 right-of-way, where there are immature plants. Further studies are needed to determine whether this situation is due to grazing pressures. Grazing by domestic livestock is a threat to both populations, together with additional grazing from feral burros and mule deer at the Burro Creek site.

No existing Federal or State laws protect *Cowania subintegra*, nor is there a management plan in effect for either population. Restrictions concerning the removal of plants from Federal lands are extremely hard to enforce, especially when the habitat is as easily accessible as is that of *Cowania*. Therefore, the Service has determined it not prudent to designate Critical Habitat for the species, at this time.

Comments from all interested parties regarding this proposal must be received by September 13, 1983. Public hearing requests were due by August 29, 1983. Comments and materials on the

Continued on page 3

Three Rio Yaqui Fishes Proposed With Critical Habitat

The Service has proposed to list the Yaqui chub (*Gila purpurea*) as Endangered, and the beautiful shiner (*Notropis formosus*) and the Yaqui catfish (*Ictalurus pricei*) as Threatened species (F.R. 7/15/83). The same action proposed Critical Habitat for all three fishes on the San Bernardino National Wildlife Refuge (SBNWR), Chochise County, Arizona.

In the past, these fishes were found throughout the Rio Yaqui basin and in a few smaller drainages. However, the range of all three species has been significantly reduced, primarily due to habitat destruction. Remaining populations are in danger of being subjected to intense competition and genetic swamping through the release of closely related exotics.

The remaining United States populations of Yaqui chub are limited to a few springs on the San Bernardino Ranch (now the SBNWR) and Leslie Creek,

both in southeastern Arizona. The shiner and catfish have been extirpated from the United States. The aquatic habitats of SBNWR, proposed as Critical Habitat, provided habitat for one of the two known populations of Yaqui chubs. The refuge also provides expansion

Continued on page 5



Yaqui chub

Photo by James E. Johnson



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of July:

Region 1—California least tern (*Sterna albigrons browni*) activity has picked up at Seal Beach National Wildlife Refuge since the last report period. Currently, there are at least five pairs

active on NASA Island. In light of these developments, additional pairs could still nest this year. The total colony size would probably be small to moderate due to the large percentage of vegetational coverage. Other sites in Orange County are having a successful season so far.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2**: Arizona, New Mexico, Oklahoma, and Texas. **Region 3**: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4**: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5**: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6**: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7**: Alaska.

The **ENDANGERED SPECIES TECHNICAL BULLETIN** is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

The NASA Island electric fence has been successful at keeping out mammalian predators. Skunk tracks were found outside the fence, but not inside, and the terns do not seem to be affected by the fence. But on June 16, during a check of NASA Island, it was discovered the electric fence was not operating properly: several strands were grounded out from interference and vandalism on the refuge by trespassers. The fence was then repaired and is operating properly. Trespass on NASA Island and other unauthorized activities have plagued our programs for the past several years, and we have discussed these problems with the Seal Beach Naval Weapons Station security staff.

FWS law enforcement agents from Idaho and Nevada met recently with representatives of the States of Idaho and Wyoming, the National Park Service, the U.S. Forest Service, and the Grizzly Bear Recovery Team to coordinate patrol efforts for this year. FWS agents have been constructing horse corrals in Zone 1, the prime grizzly bear (*Ursus arctos horribilis*) management zone, and will conduct mounted patrols to keep humans out of the bear area.

The spring 1983 cui-ui (*Chasmistes cujus*) spawning migration up the Pyramid Lake Fishway has ended. The run began May 21, peaked May 26, and ended June 20. Approximately 6,000 were taken in the fish handling building, and released in the lower Truckee River to spawn. This is the second largest run since the fishway was completed in 1976. Through radio-tagging 25 of the adult migrants, we have been able to determine migratory behavior and spawning habitat preference. Now we are monitoring the emergence and emigration behavior of this year's progeny. This information will be used to better define stream flow requirements of cui-ui during their reproductive cycle.

The Sacramento Endangered Species Staff conducted a meeting to explore the possibilities of developing a Conservation Agreement for the Inyo brown towhee (*Pipilo fuscus eremophilus*). This subspecies is a candidate for Threatened status. Population estimates indicate there are not more than 150 of the birds remaining. The towhee occurs in desert riparian habitat in the Argus Mountains, Inyo County, California. Habitat destruction or modification caused by mining, livestock grazing, feral burro use, and water diversion are potential threats. The meeting was attended by representatives from the China Lake Naval Weapons Center, the Bureau of Land Management, and private landowners.

Continued on page 8

Rulemaking Actions

Service Proposes 7 Plants

Continued from page 1

proposal, preferably in triplicate, should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

Johnston's Frankenia

The Service has proposed listing a plant, *Frankenia johnstonii* (Johnston's frankenia), as Endangered (F.R. 7/8/83). This species is known from only two counties in Texas, and one locality in Mexico. About 1,000 plants exist within a 35-mile radius in Texas (Starr and Zapata Counties); several hundred plants occur in Nuevo Leon, Mexico.

The most distinctive features of *Frankenia johnstonii* are its blue-green color and wiry appearance. The plants are perennial shrubs, usually about 30 centimeters tall, that produce small white-petaled flowers from September to May. It was first collected and described in 1966 by Dr. D. S. Correll.

The six known populations of *Frankenia johnstonii* are located in heavily grazed areas and show signs of having been browsed by cattle. All populations are on rangeland in poor condition and show low reproduction. Any habitat change brought about by chaining or plowing could impact the species.

If this plant is listed as Endangered, certain conservation authorities would become available and protective measures may be undertaken for it. These would include increased management of the species and its habitat, and the possibility of land acquisition, if necessary, through Section 5 of the Act. All known populations occur on private land; thus, the Act would not restrict land use per se, unless Federal activities, funds, or authorizations are involved. Critical Habitat is not being proposed because of the potential for collecting and vandalism.

Comments and materials concerning the proposal to list this plant as Endangered should be sent, preferably in triplicate, to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103. Comments must be received by September 6, 1983. Public hearing requests were due by August 22, 1983.

Costa Rican Plant

The "quemador del Pacifico" (*Jatropha costaricensis*), a rare plant known only from a small population in Costa Rica, has been proposed by the Service for listing as an Endangered species (F.R. 7/15/83). Fire, trampling by livestock, wood gathering, and the potential nega-

tive genetic effects of small population size are the main threats to the species.

Jatropha costaricensis is a member of the spurge family, Euphorbiaceae. This shrub to small tree (2 to 5 meters tall) has grayish leaves and inconspicuous male and female flowers on separate plants. It grows on a steep rocky limestone slope, and is a member of the maritime tropical dry forest community. The single population occurs somewhat above sea level near Playas del Coco, Guanacaste Province, Costa Rica.

Trampling by livestock, cutting of other trees, and housing developments are modifying, and could further affect, the species' habitat. There is a village within ¼ mile of the habitat, and cattle trails run through the area. Dry season fires, often kindled by vandals, are frequent in this part of Costa Rica, and a single fire could destroy the entire *Jatropha costaricensis* population. In addition, it is hypothesized that the species may have been more widespread in the past, and that a moist climatic trend in the last few thousand years has reduced its range and genetic variability. Fewer than 50 individuals of the species are known to exist in the single population. Costa Rican law provides no protection for the plant.

The Service was petitioned to list *Jatropha costaricensis* in 1979 by Sr. Luis J. Poveda of the Museo Nacional, San Jose, Costa Rica. He indicated that the species is a phylogeographically significant relict from drier climatic conditions in the past, and that the habitat is being destroyed. In response to the petition, the Service published a notice of review in the July 31, 1979, *Federal Register*. Three professional botanists commented in support of the need to list, and no data were provided to indicate that a listing is not warranted. The proposed rule makes the finding that the petitioned action on this species is warranted, in compliance with Section 4(b)(3)(B)(ii) of the Endangered Species Act, as amended in 1982.

In addition to trafficking restrictions, several other conservation and protective measures will be authorized if the proposed rule becomes final. Joint action on the plant with Costa Rican authorities could be facilitated through the international cooperation provisions in Section 8 of the U.S. Endangered Species Act, or through the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (to which Costa Rica and the U.S. are parties). Section 8A(e) of the Act was amended in 1982 to give greater emphasis to plant conservation through this Convention. *Jatropha costaricensis* is not currently on the Annex to the Convention, but if the listing proposal is made final, the Service will determine if it should be recommended for addition.

Comments on the proposed listing of

Jatropha costaricensis as an Endangered species are invited from the Government of Costa Rica and from all interested agencies, organizations, and individuals, and should be received by the Director, U.S. Fish and Wildlife Service (OES), Washington, D.C., 20240 by October 13, 1983. Requests for a public hearing on the proposal were due by August 29, 1983.

Pedate Checker-mallow and Slender-petaled Mustard

Two plant species, *Sidalcea pedata* (pedate checker-mallow) and *Thelypodium stenopetalum* (slender-petaled mustard) have been proposed as Endangered species (F.R. 7/15/83). Both species grow in the few remaining wet, alkaline meadows in the Big Bear Basin of San Bernardino County, California.

After documented loss of more than 85 percent of original meadowland, the checker-mallow survives in only about 15 acres at three localities, and the mustard in only about 16 acres at four localities. Residential and commercial land development, and other man-made changes in water levels and drainage patterns contributed to the loss of habitat. The remaining colonies of both plants are very small and vulnerable, and face prospects of additional habitat loss.

The pedate checker-mallow is a multi-stemmed, perennial member of the mallow family. The slender-petaled mustard is an herbaceous short-lived perennial. About 80 percent of the remaining habitat for both species is subject to development, much of it anticipated in the next few years. In a few areas, off-road vehicle activity has eliminated colonies and damaged habitat.

Although both plants are listed by the State of California as Endangered, State law has not successfully removed the threats facing the species in their natural habitats. Federal listing would provide some additional protection for the species and provide new options (including recovery programs) for their protection and management.

The Service does not consider the designation of Critical Habitat for these two plants to be prudent at this time. All known colonies of the pedate checker-mallow and all but one colony of the slender-petaled mustard occur on private lands, where direct Federal involvement is minimal. Critical Habitat designation would likely focus attention on the plants and their rare status, and might encourage incidental takings, or takings for collections or commercial purposes. No current or proposed Federal programs that would adversely affect the habitats of these species are known.

Comments on this proposal must be received by September 13, 1983. Public

Continued on page 4

Service Proposes 7 Plants

Continued from page 3

hearing requests were due August 29, 1983. Comments should be submitted to: Regional Director, U.S. Fish and Wildlife Service, Floyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232.

Ashy Dogweed

The Service has proposed *Dyssodia tephroleuca* (ashy dogweed), a relict species known only from one area in Zapata County, Texas, as an Endangered species (F.R. 7/22/83). The continued existence of the plant is threatened by overgrazing, possible further loss of habitat by roadside blading, brush clearing, and by possible collecting and vandalism.

The ashy dogweed was historically known from two populations in southwestern Texas; however, the Zapata County population is the only known remaining site. This 1-acre area contains approximately 1,300 individuals, most of which are on private property; part of the plants, however, are on a State highway right-of-way. Protection plans need to be developed so that roadside maintenance is done in a way compatible with the continued existence of *Dyssodia tephroleuca*. The State of Texas currently has no law protecting the plant. Due to its very restricted geographic distribution and accessibility, Critical Habitat is not being proposed.

The ashy dogweed is a perennial herb with stiff erect stems up to 30 centimeters in height. The flower heads (both ray and disk florets) are yellow to bright yellow and about 2.5 centimeters in diameter. Flowering occurs from March to May, depending on rainfall. The plants occur in fine, sandy-loam soils in open areas of a grassland-shrub community.

Comments from all interested parties, preferably in triplicate, must be received, by September 20, 1983. Public hearing requests must be received by September 6, 1983. All correspondence regarding this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

Key Tree-cactus

The Key tree-cactus (*Cereus robinii*) has been proposed for listing by the Service as an Endangered species (F.R. 7/29/83). *Cereus robinii* occurs in the Florida Keys and Cuba, where its range and numbers have been drastically reduced. The few remaining populations are jeopardized by continuing urbanization of habitat and by horticultural exploitation.

Cereus robinii, a member of the cactus family (Cactaceae), consists of two varieties, *Cereus robinii* var. *robinii* and *Cereus robinii* var. *deeringii*. It was originally described in 1864 as *Pilocereus robinii* by the French botanist Lemaire. (Other past synonyms have been listed in the proposed rule.) This columnar species is the largest of the native Florida cacti, with its erect, branched stems reaching heights of 8 meters (about 25 feet). Its beautiful flowers, which open in the late afternoon or evening, are 5-6 centimeters long and vary from white to green to purplish. The fruit is a dark red berry 3-5 centimeters in diameter. This attractive cactus is jeopardized in part by its potentially high demand for horticulture.



Cereus robinii is the only native Florida cactus that stands upright in maturity and is considered a tree.

Historically, *Cereus robinii* was known from at least 11 sites in the Florida Keys and 2 in Cuba. Today, however, only five populations remain in the Keys, and the species has suffered similar losses in Cuba. This cactus is already considered endangered by the International Union for the Conservation of Nature and Natural Resources. Habitat destruction is the primary cause of the decline. *Cereus robinii* occurs in rocky hardwood hammocks, a habitat type that is disappearing rapidly in the Florida Keys. This area has been undergoing rapid residential and recreational development, resulting not only in the loss of *Cereus robinii* populations but of the entire hardwood hammock habitats where they once grew. Only two of the remaining U.S. sites where the species still exists are protected; one is in Key Deer National Wildlife Refuge and the other is in Long Key State Park. The privately owned tracts are especially vulnerable through the continued development of the Keys. Although *Cereus robinii* is listed as endangered under Florida law, offering some protection from taking, intrastate transporting, and selling, this status does not protect the plant's habitat.

Because of its attractiveness and rarity, *Cereus robinii* also is particularly vulnerable to over-collection. Vandalism is another problem that the species has already experienced. These activities could result in the extirpation of *Cereus robinii* from its few remaining sites. Even on public lands, the enforcement of taking and vandalism prohibitions has been found to be difficult. For these reasons, the Service has decided not to propose Critical Habitat for *Cereus robinii* at this time. Publishing Critical Habitat maps would pinpoint the populations and make them even more vulnerable. Nevertheless, if the proposed Endangered listing is approved, *Cereus robinii* will receive the habitat protection authorized under Section 7 of the Endangered Species Act.

Comments and materials concerning this proposal should be sent to the Endangered Species Field Station, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207. Comments from all interested parties must be received by September 27, 1983. Public hearing requests must be received by September 12, 1983.

Actions leading to Federal protection for the plants reviewed above (except *Jatropha costaricensis*) began in 1973 with the inclusion of plant conservation measures in the Endangered Species Act. Section 12 of the 1973 Act directed the Smithsonian Institution to compile a report on endangered, threatened, and extinct plant species. The resulting 1975 report included the six plants proposed

Continued on page 8

Rio Yaqui Fishes

Continued from page 1

habitat for the Yaqui chub and prime reintroduction sites for the beautiful shiner and the Yaqui catfish, which are still found in Mexico.

Background

The proposed Rio Yaqui fishes were first collected and described from San Bernardino Creek just south of the Arizona-Sonora border in the latter half of the 19th century. Except for minimal available information on the basic habitat preferences, little is known about the biology of the Rio Yaqui fishes. Both in 1966 and in 1973, the Yaqui chub was recommended for listing, but no action was taken because its status in Mexico was undetermined.

In 1978, the Service contracted with biologists from Arizona State University and the University of Michigan to survey the status of fishes in the Rio Yaqui system of Mexico. These workers found only one specimen of the Yaqui chub after extensive collection efforts throughout the Rio Yaqui drainage. This final report, *Fishes of the Rio Yaqui, Mexico and United States, 1979*, also noted reduction for the beautiful shiner and the Yaqui catfish and expressed concern for these species. In 1979, the American Fisheries Society recommended special concern for the status of the beautiful shiner and the Yaqui catfish, and described the Yaqui chub as endangered.

Threats to the Species

All three of the proposed Rio Yaqui species are seriously affected by a variety of habitat modifications. Activities such as arroyo cutting, stream headwater diversion, impoundment construction, and excessive pumping of underground aquifers have caused diminished spring flows in most of the species' habitat. All three fishes existed in San Bernardino Creek until its spring flow was severely diminished; its remaining aquatic habitat was destroyed by cattle. Remaining U.S. Yaqui chub habitat is also threatened by gradually diminishing spring flow. Many fish populations in Mexico are also being adversely affected by the modification of river systems into canal systems for irrigation agriculture.

Extant populations of the beautiful shiner and the Yaqui catfish are seriously threatened by the introduction of closely related exotic species. Future releases of the red shiner (*Notropis lutrensis*), which is currently widely established in Arizona, into the Rio

Yaqui system may reduce the beautiful shiner population. The Yaqui catfish may be similarly affected by expanding populations of the channel catfish (*Ictalurus punctatus*) and blue catfish (*Ictalurus furcatus*) that have already been established in the Rio Yaqui drainage. The introduction of exotics into Mexico is expected to continue at an increased rate as the interior portions of Sonora and Chihuahua are developed.

The Rio Yaqui fishes receive no legal protection in Mexico. Arizona law provides protection for the Yaqui chub (as a "Group II species" - a species in danger of being eliminated from the State), but the State law does not provide protection of essential habitat. The beautiful shiner and the Yaqui catfish are listed on Group I (species extirpated from Arizona that may possibly be reestablished) of the Arizona list of threatened and unique wildlife.

Subsection 4(6)(8) of the Act requires that proposals to determine Critical Habitat include a brief description and evaluation of activities that may adversely modify the area if undertaken, or may be affected by such designations. The proposal reports that any activity that would lower the groundwater level to the extent that the water flow from springs on SBNWR would be reduced could adversely impact the Critical Habitat. In addition, the release of exotic or nonnative fishes could also adversely impact the Critical Habitat.

Effects of the Rule

If these species become listed as Endangered or Threatened, the prohibitions of Section 9 of the Act would make it illegal for any person subject to the jurisdiction of the United States to import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale these species in interstate or foreign commerce. It also would be illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that was illegally taken.

Other regulations codified in Title 50 of the Code of Federal Regulations provide for the issuance of permits to carry out otherwise prohibited activities involving listed species under certain circumstances. The two fishes proposed as Threatened, the Yaqui catfish and beautiful shiner, have a proposed special rule that would allow take in accordance with applicable State law, and allow these fishes to be managed as Threatened species.

If finalized, the proposed rule would require Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of these three fishes and would require them to insure that their actions do not result in the destruction or adverse modification of their



Photo by James E. Johnson

Arroyo cutting is one of the threats to the springs and streams that provide habitat for the three proposed fishes.

Critical Habitat. The only proposed Federal activity that may potentially affect the proposed Critical Habitat is geothermal exploration in the San Bernardino Valley that will be regulated and licensed primarily by the Bureau of Land Management (BLM). This proposed activity, which is beyond the boundaries of the SBNWR, could possibly affect underground aquifers supplying surface water to the proposed Critical Habitat. BLM will be allowed to proceed with the project in the area as long as the Critical Habitat water supplies are protected.

It should be noted that listing these species does not specifically preclude geothermal development in the area, and that a Critical Habitat designation may not affect the BLM activity. Possible impacts would be addressed during conferral or consultation with the Service as required by Section 7 of the Act, as amended.

Comments Requested

Any comments or suggestions concerning any aspect of the proposed rule are solicited from the public, other concerned governmental agencies, the scientific community, industry, private interests, or any other interested party. Comments must be received by September 13, 1983. Public hearing requests were due August 29, 1983. Comments and requests should be addressed to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87130.

Rulemaking Action Continued

Kangaroo Imports Allowed to Continue

Commercial importation of hides and products from three Threatened species of kangaroos may continue under a special rule published recently by the Service (F.R. 8/1/83). A separate proposed rule to delist the three species is still under review (see the May 1983 BULLETIN).

Background

In 1974, the red (*Macropus rufus*), eastern gray (*M. giganteus*), and western gray (*M. fuliginosus*) kangaroos were listed by the United States as Threatened species, and importation of hides and products was prohibited at that time. The listing and import ban was intended to remain in effect until the Australian States developed adequate conservation plans and demonstrated that trade would not jeopardize the continued existence of the three species. Seven years later, in an April 29, 1981, *Federal Register* rule, the Service acknowledged that the Australian Government had met both criteria. The import ban was lifted for a 2-year trial period, although these three species remained listed as a precaution. On November 10, 1982, Australia petitioned the Service to allow continued import of kangaroo products and hides into the U.S. after the close of the 2 years, and to remove all three kangaroos from the Threatened species list. The accompanying data were judged sufficient to propose these actions since they allayed some of the previous concerns. Separate proposed rules to allow continued importation and to delist were published

in the April 8, 1983, *Federal Register*.

Many persons and organizations had anticipated the proposal to allow continued imports. Over 1,000 comments were received from late 1982 through the date of the proposal, over 90 percent of them in opposition. All of these were considered as part of the rulemaking process. Another 195 letters were received during the official comment period, all but 2 opposing the proposal. Most of this correspondence presented basically the same points, and the Service's responses can be found in the August 1 rule.

The bases of the decision to allow continued kangaroo imports were summarized in the rule notice: 1) all of the Australian States have developed effective kangaroo management plans; 2) each State now uses aerial surveys to estimate and monitor kangaroo numbers, and these surveys demonstrate that kangaroos number well into the millions; 3) Australia is a large country with many sparsely settled areas, and kangaroos have adapted well to agricultural practices; 4) the Australian Government has a continuing policy of setting up large national parks and preserves, and much of this land is undisturbed kangaroo habitat; 5) the taking of kangaroos is to relieve pressures in specific areas where they conflict with human interests, thereby helping to forestall a return to the indiscriminate killings of kangaroos in the past; and 6) the removal of the U.S. kangaroo import ban has had no measurable adverse effects on the species over the past 2 years.

Sampson's Pearly Mussel

Proposed for Delisting

The Service has proposed to remove Sampson's pearly mussel (*Epioblasma (=Dysnomia) sampsoni*) from the U.S. List of Endangered and Threatened Wildlife (F.R. 7/15/83). This action is based on a review of all available data that indicate that this species is extinct.

The only known historical localities of the species are portions of the Wabash River in Illinois and Indiana, and the Ohio River near Cincinnati. A series of dams have been built in these areas, eliminating the species' gravel and sand bar habitat. No specimens have been collected in over 50 years despite repeated sampling within its range.

At least once every 5 years, the Service conducts a review of each listed species to determine if it should be removed from the list or reclassified from Endangered to Threatened (or vice

versa) status. As a part of this review for *E. sampsoni*, the Service contracted with Dr. Arthur Clarke to determine its present status. He has recently completed a survey of the species' historic range as well as interviews with many commercial clammers and shell buyers. Dr. Clarke was unable to find specimens or recent evidence of the species and believes it to be extinct. A substantial reward was offered for any information concerning *E. sampsoni* and this effort was also unsuccessful.

Comments and materials concerning this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111. All comments must be received by September 13, 1983. Public hearing requests were due August 29, 1983.

Raptor Exemption

Rule Finalized

The Service has published a final rule that implements new regulations identifying conditions under which birds of prey listed as Endangered or Threatened under the Endangered Species Act of 1973, as amended, are exempted. (F.R. 7/8/83). The rule implements the so-called "raptor exemption" of the Act passed by Congress in 1978 and later amended in 1982.

The rule now exempts holders of qualifying raptors only from the prohibitions of Section 9(a)(1) of the Act. The remaining prohibitions found in Section 9 do apply, particularly the need to satisfy any applicable requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to import or export "exempt" raptors listed on any appendices to CITES.

Raptors qualifying for exemptions from Section 9(a)(1) of the Act are only those raptors held in captivity or in a controlled environment in the U.S. on November 10, 1978, and their progeny. The rule further clarifies that the progeny of any exempted raptor is also exempted only until it is intentionally returned to the wild.

The July 7 rule also amends regulations promulgated under the Migratory Bird Treaty Act to establish uniform standards and procedures for engaging in the propagation of birds of prey. It enables raptor propagators and falconers to purchase, sell, or barter certain specially marked, captive-bred raptors both in the U.S. and foreign countries. Comments on this rule, which was proposed on January 12, 1983, are summarized in the *Federal Register* account.

Change Anticipated

For

Snail Darter Status

The Service is reviewing the status of the snail darter (*Percina tanasi*) in preparation of a proposal to either reclassify or delist the species. An advance notice of this proposed action was recently published (F.R. 7/21/83).

The Service's Snail Darter Recovery Plan, developed by the Snail Darter Recovery Team, indicates that based on the snail darter's present status, the species could be reclassified from Endangered to Threatened status. Neither the recovery team nor the Service feels sufficient evidence is presently available to allow the species to be removed from the official U.S. List of Endangered and Threatened Wildlife. Intensive field survey work being conducted this summer could change that tentative conclusion, however.

The snail darter was listed as an Endangered species on November 10, 1975. At that time, the only known population was threatened by the imminent completion of Tellico Dam and the flooding of the fish's gravel shoals habitat in the Little Tennessee River. Introductions of the darter into three other streams, prior to and subsequent to the completion of the Tellico Reservoir project, have thus far proved successful only in the Hiwassee River, Polk County, Tennessee.

Snail darters were discovered in South Chickamauga Creek, Hamilton County, Tennessee, on November 1, 1980, and later in Catoosa County, Georgia. Searches in the Tennessee River and its tributaries resulted in the discovery of snail darters in three additional locations.

In addition to data on the species and comments on the notice, the Service is requesting information on environmental and other impacts that would result from a proposal to either reclassify or delist the snail darter. Comments from all interested parties must be received by September 19, 1983. They should be sent to Field Supervisor, Asheville Endangered Species Field Office, U.S. Fish and Wildlife Service, Plateau Building, Room A-5, 50 South French Broad Avenue, Asheville, North Carolina 28801.

Proposed Changes in Taking Regulations

Revisions of the Federal regulations on Endangered species (50 CFR 17) have been proposed to implement the 1982 Endangered Species Act Amendments (F.R. 7/8/83). These proposed revisions would 1) provide, under limited circumstances, for permits to take Endangered and Threatened species incidental to, and not the purpose of, an otherwise lawful activity, and 2) add a prohibition against removing, and reducing to possession, Endangered and Threatened plants from areas under Federal jurisdiction without a special permit.

If the proposal is adopted as published, an applicant for a permit for incidental take would have to submit a detailed conservation plan to the Service, which would then evaluate the plan to ensure its effectiveness and a minimum negative impact on listed species. Details on the incidental take and plant taking proposals are available in the July 8 *Federal Register*, pp. 31417-31423. The comment period for the proposed rule ends September 2. Comments should be addressed to the U.S. Fish and Wildlife Service, Federal Wildlife Permit Office, P.O. Box 3654, Arlington, Virginia 22203.

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director - Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director - Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Fourth CITES Meet Adopts Species Changes

The Conference of Party Nations that met in Gaborone, Botswana, on April 19-30, 1983, for the fourth CITES meeting made a number of decisions on amendments to Appendices I and II of that international treaty. The Service recently announced these amendments and requested comments on whether the United States should enter a reservation on any of them (F.R. 7/5/83).

The adopted amendments are quite lengthy and, therefore, are not reprinted here. Please consult the *Federal Register* (Vol. 48, No. 129, pp. 30732-30733) for a complete listing. Comments regarding the taking of reservations by the U.S. on any of the amendments were due by July 25, 1983. The Service received no comments by that date, and did not recommend taking any reservations.

Botswana Meeting

Over 300 participants from 62 countries and non-governmental organizations met in Botswana for the fourth gathering of CITES parties. This event marked the tenth anniversary of the Convention.

The Convention amendments included the transfer of five whale species from Appendix II to Appendix I. The listing of the minke whale (*Balaenoptera acutorostrata*) and the pygmy right whale (*Caperea marginata*) will take effect on January 1, 1986, coinciding with the beginning of a total moratorium on commercial whaling decided by the International Whaling Commission (IWC) last year. Inclusion on Appendix I of the other species, the Brydes whale (*Balaenoptera edeni*), beaked whales (*Berardius* spp.), and bottle-nosed

whales (*Hyperoodon* spp.), is immediate.

Proposals by certain African countries to transfer the leopard (*Panthera pardus*) from Appendix I to Appendix II were opposed by delegates who feared such an action would lead to the revival of the fur trade. A compromise resolution was agreed upon by the Parties that leaves the leopard on Appendix I. This agreement establishes procedures for the export and import of pelts under a strictly managed quota of leopards that could be hunted and traded as personal effects from seven African countries, without re-activating the fur trade. This decision will be reviewed at the next CITES meeting in 2 years.

The U.S. delegation withdrew proposals for the removal from Appendix II of the bobcat (*Lynx rufus*) and lynx (*Lynx canadensis*), and certain populations of the grizzly bear (*Ursus arctos*) and Alaskan gray wolf (*Canis lupus*) that are not listed under the Endangered Species Act. This was done after establishing that these populations could be treated as look-alikes of other species or populations in Appendix II.

The CITES parties transferred three parrot species, the caninde macaw (*Ara glaucogularis* (=caninde)), yellow-cheeked conure (*Ognorhynchus icterotis*), and red-fronted macaw (*Ara rubrogenys*) from Appendix II to I. More than two dozen cactus species were transferred from Appendix II to I and over a dozen other plants were added to either Appendix I or II (U.S. proposals).

The fifth Conference of Party Nations will be held in 1985. Colombia offered to host this meeting, but a final decision regarding the location has not yet been made by the standing committee.

Western Hemisphere Nations Gather To Strengthen CITES

Wildlife conservation leaders from 21 Western Hemisphere nations attended a 2-week seminar, August 1-12, 1983, at the Department of State for an in-depth study of ways to improve the implementation and enforcement of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The delegates participated in presentations by the CITES Secretariat, the U.S. Fish and Wildlife Service, the Canadian Wildlife Service, and several other government and private agencies on mutual problems and experiences in administering the 81-nation treaty that marks its tenth anniversary this year.

CITES was negotiated and signed in Washington in 1973. Its purposes are to promote international cooperation in conservation, and to protect endangered wildlife and plants against over-exploitation from international trade. It lists wild animals and plants under one of three categories, depending on the degree of threat, and regulates trade through a system of permits. The Interior Department, through the U.S. Fish and Wildlife Service, administers CITES for this country.

"This seminar is an example of the cooperative spirit among the community of nations that has made CITES a significant force for curbing the threat of species' extinction caused by trade," said G. Ray Arnett, Assistant Secretary of the Interior for Fish and Wildlife and Parks. "CITES is a dynamic, working treaty and is expanding rapidly. It is important that implementation and enforcement keep pace with that growth."

A major obstacle to proper implementation of CITES in the Western Hemisphere, as in most of the world, is the lack of personnel in government agencies who understand the treaty. To improve this situation, the CITES Secretariat is sponsoring a series of seminars on implementation. The Service has assisted Secretary-General Eugene Lapointe in planning and coordinating the sessions, which will serve as a model for future seminars. Goals are to establish direct working relationships between the CITES Management Authorities of the Western Hemisphere nations, strengthen the network of CITES administrators throughout the region, encourage organization of adequate government structures for CITES implementation, and increase regional cooperation in dealing with CITES-related problems.

Simultaneous English-Spanish trans-

lations were provided during the first week of presentations by all the participating countries, conservation organizations, and the following U.S. government agencies; the Departments of Interior, State, Agriculture, Justice, and Commerce. The second week of the seminar was held at the Department of the Interior, with onsite inspection of import and export activities at the John F. Kennedy Airport in New York and the Newark, New Jersey, Seaport.

The World Wildlife Fund-U.S. and the United Nations Environmental Programme helped fund the seminar. Western Hemisphere nations participating are: Antigua and Barbuda, Argentina, Bahamas, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Mexico, Nicaragua, Panama, Paraguay, Peru, Santa Lucia, Suriname, Trinidad and Tobago, United States, Uruguay, and Venezuela.

Key Tree-Cactus

Continued from page 4

during July 1983; the report was treated as a petition by the Service, and its main list was published as a notice of review on July 1, 1975. This action was followed on June 16, 1976, by a proposal to list a number of plants, including these six plants.

Due to subsequent requirements of the 1978 amendments to the Endangered Species Act, the 1976 proposal was withdrawn. Further amendments in 1982 placed a new deadline of October 13, 1983, on pending petitions; proposal of these six plants before the deadline satisfied the petition requirement. The plants have now been repropoed on the basis of new data.

Effects of Final Rules

If these proposals are approved as published, all seven will be listed under the Act as Endangered species. Section 7 of the Act requires all Federal agencies to ensure that any activities they authorize, fund, or carry out are not likely to jeopardize the species' continued existence. With regard to trade, all of the prohibitions contained in 50 CFR 17.61 on interstate and international trafficking would apply to the proposed plants. Further, the 1982 Endangered Species Act Amendments make it unlawful to remove and reduce to possession Endangered plant species from areas under Federal jurisdiction or to sell them, offer them for sale, or deliver, receive, carry, transport, or ship them in the course of a commercial activity. Special permits for certain otherwise prohibited activities could be requested under 50 CFR 17.62 and 17.63 from the Federal Wildlife Permit Office.

If any of these species are listed, the Service will also review them to determine whether they should be placed upon the Annex of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, which is implemented through Section 8A(e) of the Act, and whether they should be considered for other appropriate international agreements.

Regional Briefs

Continued from page 2

Six biologists from the Sacramento Endangered Species Office spent 2 days in Coachella Valley mapping the remaining habitat of the Coachella Valley fringe-toed lizard (*Uma inornata*). The lizard inhabits only areas of active sand dunes, and this habitat type is rapidly disappearing in the Coachella Valley as development for housing and recreational facilities increases. Only the area between Interstate Highway 10 and State Highway 111 was examined. The total acreage of undeveloped habitat that still might contain lizards is estimated at 35,000 acres. The information will be used to help local governments and the FWS protect remaining lizard habitat and recommend compensation programs to developers.

Region 2—Spilling of reservoirs along the Colorado River may result in nesting problems for the Yuma clapper rail (*Rallus longirostris yumanensis*); however, Colorado squawfish (*Ptychocheilus lucius*) may benefit. Willow Beach National Fish Hatchery (NFH), below Hoover Dam, uses cold (55°F) hypolimnetic waters to raise trout. With Hoover Dam spilling warm (70°F) waters from Lake Mead, the trout had to be moved out of Willow Beach, leaving room to raise Colorado squawfish. Between Dexter NFH and Willow Beach, Region 2 hopes to produce some 200,000 fingerling squawfish this autumn for reintroduction into Colorado and Arizona waters.

* * *

The Fish and Wildlife Service issued a jeopardy opinion to the Federal Highway Administration regarding an Endangered orchid, the Navasota ladies'-tresses (*Spiranthes parksii*) and the expansion of State Highway 6 south of Bryan, Texas. The opinion was issued because the Service believes the action will contribute to the demise of the species. This is one of many planned development activities in the area. The opinion offered two alternatives: (1) utilize an alternative alignment for the pro-

posed highway expansion that would not affect the orchid, or (2) reduce the cumulative impacts to the Navasota ladies'-tresses by the protection of the main population of the species in its natural habitat.

On June 29-30, two male ocelots (*Felis pardalis*) were captured and radio-collared on a previously untrapped beach area in southeast Texas. A total of 10 ocelots have now been captured and collared during the status survey contracted to Texas A&I University at Kingsville, Texas. Thus far, the study has indicated that the ocelot population is widely distributed and exists solely in the few remaining areas of dense brush.

The Masked Bobwhite Recovery Plan is currently being revised and updated. The bobwhite's (*Colinus virginianus ridgwayi*) status has worsened since the plan was initially approved in 1978. Recent evidence suggests that a small population that had been reestablished on a private ranch in Arizona in the mid-1970s may have disappeared as a result of a summer drought and intensive cattle grazing. Only one wild population is known to remain, and it is in Mexico. A recent field inspection of the area revealed increasing threats from livestock grazing, land clearing, and planting of buffalo-grass (an African exotic).

Region 5—Efforts to establish additional populations of an Endangered plant, the Furbish lousewort (*Pedicularis furbishiae*), along a now protected segment of the upper St. John River (Maine) are beginning to show signs for optimism. Seeds from mature plants were collected and planted along the river banks in 1981. Many of the seeds successfully germinated and the young plants are growing vigorously. This effort is in accordance with the approved Furbish Lousewort Recovery Plan.

During July, Roger Hogan of the FWS Region 5 Office and pilot Clyde Bolin brought back six bald eaglets (*Haliaeetus leucocephalus*) from Manitoba, Canada, for hacking in Massachusetts and New Jersey. Craig Koppie of the FWS Washington Office and Keith Cline of the National Wildlife Federation participated by climbing the nest trees and carefully bringing down the young birds.

The Pittston Company has abandoned its plans to build a large, \$1 billion marine terminal and oil refinery at Eastport, Maine. In an announcement from the Pittston corporate headquarters, the company said that the "escalation of costs and changes in world oil market conditions since the project was proposed 10 years ago have made it uneco-

nomical." Concerns had been voiced earlier about impacts the development could have had on the bald eagle and possibly other listed species in the area (see the March 1979 BULLETIN).

The Regional Director has signed the Robbins Cinquefoil Recovery Plan . . . The State of Massachusetts has passed a non-game wildlife tax check-off program to raise additional funds for management of these species . . .

Region 6—A meeting of the Black-footed Ferret Advisory Team (BFAT) was held on July 8 in Meeteetse, Wyoming. The advisory team consists of representatives from the Wyoming Game and Fish Department, Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, University of Wyoming, and conservation groups, as well as private landowners and a State lands commissioner. The main item of discussion involved increasing efforts to locate, capture, and mark ferrets (*Mustela nigripes*), while minimizing impacts to the population. Litter surveys are ongoing in the Meeteetse area; marking and radio-tracking studies are scheduled to begin in the near future. The team also reviewed a request by a wildlife film producer to prepare a proposal for a documentary on the Meeteetse ferret project. The next BFAT meeting was tentatively scheduled for September 22.

A final report by the FWS Colorado River Fishery Project entitled, "Movements, Migration and Habitat Preference of Radiotelemetered Colorado Squawfish; Green, White and Yampa Rivers, Colorado and Utah," was published in March 1983. According to the report, a total of 31 Colorado squawfish were implanted with radio modules in 1980 and 1981. However, only 16 individuals were tracked longer than 3 months due to radio module failure, poor radio reception, etc. Two movement patterns were observed in the implanted squawfish: sedentary and highly mobile. The total distance moved by sedentary fish averaged 18 kilometers (km), while the total distance moved by 10 mobile fish averaged 245 km. This difference in behavior in the two groups was linked to sexual maturity, with mature fish undertaking spawning migrations. A physical characterization of the spawning habitat indicated that Colorado squawfish spawned at a 22°C temperature over rubble substrate. Water depths and velocities at the primary study site ranged from 0.9 to 2.1 meters depth and 0.0 to 0.1 meters per second velocity.

A limited quantity of the updated version of "Endangered and Threatened Fishes of the Upper Colorado River Basin" is now available. Information

provided by the FWS Colorado River Fishery Project and Colorado Division of Wildlife's endangered species monitoring and larval fish sampling program have been incorporated, and each section has been updated to December 1982.

Region 7—Partial results from this summer's peregrine falcon survey and banding efforts are available, and once again there is reason for optimism. A record high number of American peregrine falcon (*Falco peregrinus anatum*) pairs have nested along the upper Yukon River in 1983. Endangered species biologist Skip Ambrose observed 27 pairs on the upper Yukon River, a number higher than that recorded by Tom Cade during his early survey work in the 1950s. Although the number of young produced per pair was not as high as for some years, the record number of breeding pairs suggests that more young birds are entering the breeding population and nesting for the first time.

Elsewhere in interior Alaska, the picture is not as bright. The number of breeding pairs on the Porcupine River has declined slightly from last year's record 14 pairs, and the Tanana River, which formerly had as many as 14 pairs, continues to support only 5. No firm results are yet available from our contractors working on Arctic peregrine falcons (*Falco peregrinus tundrius*) along the North Slope, although early reports are 30 occupied sites produced 65 young.

In the Aleutian Islands, final preparations are underway for the Aleutian Canada goose (*Branta canadensis leucopareia*) trap and transplant operation. As part of the effort to reestablish geese on Agattu Island, up to 200 goslings and adults will be trapped on Buldir Island and released on Agattu.

The Region 7 Endangered Species Staff is filming peregrine falcon and Aleutian Canada goose field activities this summer to document FWS recovery efforts and to inform other programs of our work.

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

RECOVERY PLANS APPROVED

Moapa Dace

The Moapa dace (*Moapa coriacea*) is a small member of the minnow family, and is the sole member of its genus. This fish, known only from the Warm Springs area of southern Nevada, inhabits several springs and their outflows that comprise the headwaters of the Muddy River. (The Paiute name for muddy is moapa, and the stream is frequently referred to as the Moapa River.) Habitat damage and exotic fish introductions caused a serious decline in this species, and it was listed by the Service in 1967 as Endangered. It is also classified as a Rare species by the State of Nevada. The Moapa Dace Recovery Plan, prepared by Donald W. Sada, Fish and Wildlife Service, Reno, Nevada, and approved by the Director on February 14, 1983, delineates the steps needed to return the species to a secure status.

Even prior to the influences of habitat degradation and introduced species, the range of the Moapa dace was restricted to the Muddy River headwaters where thermal springs maintain water temperatures between 28°C and 32°C. The fish was not present downstream where the water is cooler and more turbid. In 1948, when the Moapa dace was described by C.L. Hubbs and R.R. Miller, it was thought to occupy 25 springs and about 10 miles of spring outflow. However, recent investigations have found adult Moapa dace occurring in low numbers in restricted portions of 3 springs and less than 2 miles of spring outflow. Reproduction has been documented only in a 100-yard length of spring outflow on private property owned by Frederick Aparcar.

Habitat Loss

By far the greatest factor in the decline of native western fishes, particularly desert species with restricted ranges, is habitat alteration or destruction. Moapa dace are known to be adversely affected by: 1) physical habitat disturbances, such as channelization and vegetation control; 2) chemical toxicity from chlorination of waters converted to resort swimming facilities; and 3) displacement by exotic species. In the Warm Springs area of the Muddy River, extensive and drastic modifications to the aquatic habitat have occurred.

All of the springs on the private Desert Oasis Warm Springs Resort and the former 7-12 Resort (which is now the Moapa National Wildlife Refuge) have been lined with concrete and/or gravel, channelized, chlorinated, and cleared of vegetation so completely that the Moapa dace was extirpated. The springs on the Aparcar property have been channelized

and piped by the Moapa Valley Water Company for diversion to domestic uses. Fortunately, the environment in the outflow from one of the Aparcar Springs remains adequate to provide for the only known reproducing population of the species. Although the springs found on property owned by the Church of Latter Day Saints (LDS) also have been heavily modified, one of the outflows still supports a reduced number of adult Moapa dace. Most or all of the springs that originally contained Moapa dace still flow, but modification and current use of these habitats has brought the species to the brink of extinction.

Introduced Species

Another major factor in the extirpation or decline of many desert fishes has been the introduction of exotic fishes and other aquatic organisms. In the 1960's, researchers W.L. Minckley, J.E. Deacon, and B.L. Wilson noted immediate declines in the Moapa dace following establishment of the shortfin molly (*Poecilia mexicana*) in the Muddy River, and attributed this effect to both competitive interaction and the introduction of exotic fish parasites. In addition, recent investigations have shown competition between the Moapa dace and another introduced species, the mosquitofish (*Gambusia affinis*). The fathead minnow (*Pimephales promelas*), goldfish (*Carassius auratus*), bullhead catfish (*Ictalurus nebulosus*), and other introduced fishes also are known to occur in the Muddy River, but downstream of the Moapa dace habitat.

Recovery Actions

Because the Moapa dace has no close relatives and there are no species with similar requirements from which knowledge of Moapa dace ecology can be inferred, studies of this species' life history are necessary to begin recovery. An example of the difficulties in recovering a species about which little is known is the 1972 transplant of 20 Moapa dace to

the Shoshone Ponds, a facility near Ely, Nevada, constructed by the Bureau of Land Management (BLM) for Endangered fishes. Although the relocated fish survived for at least a month, they eventually perished for unknown reasons. While research on Moapa dace ecology is proceeding, interim subobjectives for recovery include the conservation of spring and outflow habitat on the Moapa NWR, Desert Oasis Warm Springs Resort, LDS, and Aparcar properties. These waters will be managed not only for the Moapa dace, but also for the other four fishes and a snail that are endemic to the Muddy River.

The habitat conservation effort has already begun. In 1979, the 7-12 Resort was repeatedly put up for sale by the owner and subsequently purchased by the Service as the Moapa NWR. This aquatic habitat had been severely modified for public swimming. Since the area was purchased, it is no longer used for swimming and water quality has been improved by stopping the use of chlorine. An aquatic habitat management plan for the refuge is being developed by the Service with the cooperation of the Nevada Department of Wildlife. Extensive rehabilitation is being planned to reconstruct native fish habitat in springs on the refuge. Among the rehabilitation measures being considered are filling pools with rock/gravel substrate, recreating a meandering channel, and reestablishing aquatic plants. Fish barriers will be placed in the stream to hinder the further spread of exotic fish, and techniques will be developed to manage or eliminate introduced species already established. Proper management of the groundwater aquifer discharging in the Warm Springs area can be accomplished with the assistance of the BLM under a memorandum of understanding. Once the habitat is secure, Moapa dace can be stocked into the refuge waters. A fence will be constructed and signs erected to discourage public swimming or unauthorized introductions of exotic fishes. Public day-use for picnics and environmental education will be encouraged.

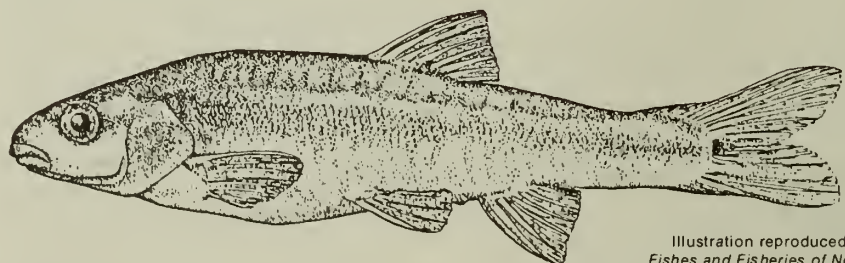


Illustration reproduced from
Fishes and Fisheries of Nevada
Courtesy of the Nevada Department
of Wildlife

Habitat damage and the introduction of exotic fish caused a serious decline of the Moapa dace.

The recovery plan calls for protecting the springs and outflows on the other three properties by willing-seller purchase or by conservation agreement with the owners. Upon accomplishing this goal, habitat rehabilitation and stocking of Moapa dace into these waters can proceed.

Copies of the Moapa Dace Recovery Plan are available from the Fish and Wildlife Reference Service. Details on the plan and its implementation can be obtained from the Portland Regional Office (see page 2 for address).

Everglade Kite

The Everglade kite (*Rostrhamus sociabilis plumbeus*) is a medium-sized hawk that depends for its survival on shallow, open freshwater marshes. It once occurred widely throughout the Florida peninsula, but extensive habitat destruction from wetland drainage and manipulation of water levels led to a steep decline in its range and numbers. The Everglade Kite Recovery Plan, approved by the Director on March 11, 1983, delineates the steps needed to prevent the extinction of this Endangered bird.

It is estimated that more than one-fourth of early peninsular Florida was covered with surface water for most of each year. Freshwater marsh habitat suitable for the kite and its only prey, the apple snail (*Pomacea paludosa*), was abundant. The Everglade kite was considered common until at least 1909, but wetland drainage accelerated about that time and the bird's population fell sharply by 1937. By 1945, the bird was reported to be in serious trouble. Due to water level manipulation and continued drainage, habitat has further deteriorated in quantity and quality. In the late 1950s and early 1960s, only a dozen or fewer birds were known to exist. Over the past decade, numbers have ranged annually from about 100-300 birds.

Kite populations have fluctuated significantly over recent decades in direct correlation with water levels in Lake Okeechobee and the Everglades. Shallow, openwater areas with emergent vegetation are needed because such habitat supports populations of the apple snail, a freshwater mollusk upon which the kite feeds almost exclusively. The result of this specialized feeding habit is evident in the kite's greatly decurved, thin, sharp-tipped bill which is adapted for extracting snails from their shells. Indeed, one of the bird's common names is the snail kite.

Droughts and floods have always been a part of the hydrology of the Everglades, but man has prevented the area from regular flooding by diverting waters for human use, thereby shortening the wet cycles and worsening the

effects of periodic droughts. According to the plan, "The needs of the kite can be stated in three words: reflood the Everglades." Since that is unlikely to happen, the plan addresses several alternatives that, if implemented, may prevent the kite's extinction.

The identification, restoration, and maintenance of habitat obviously are prime concerns, but the limited existing data on kite and apple snail ecology will have to be supplemented to ensure the most effective habitat management. Research on the reproductive potential of the Everglade kite has begun, and the plan calls for comparative studies with other snail kite subspecies in Central and South America in order to more closely identify the critical limiting factors at work in Florida. After enough information has been gathered, meaningful long-range population goals for the Everglade kite can be established.

Some potential limiting factors are already suspected. When trees or shrubs are not available, the kite nests in cattails, but this latter substrate makes the nests particularly vulnerable to wind or heavy rains. Since 1973, Ron Chandler, a National Audubon Society warden who patrols Lake Okeechobee, has been successfully moving jeopardized nests from cattails into artificial structures, and this technique has been reducing nest losses. Recent controlled studies have shown that few, if any, nests built in cattails would survive without "Chandler baskets." The impact of nest losses on productivity in other parts of the kite's range is identified in the plan as a topic for further research.

Another potential limiting factor for the Everglade kite is direct human disturbance during waterfowl hunting, including the effects of airboats and possible interference with pre-nesting behavior. It is known that kites have been shot by hunters, but the importance and extent of shooting and associated boating activities have not been determined. The recovery plan advocates an evaluation of these hunting-related effects in critical areas. If adverse impacts are documented, protective measures such as area closures, permits, regular patrols, and closures to night use could be applied. Any restrictions on public use would be issued only if fully warranted, and they would be carefully explained to the public.

A lesser factor, but possibly one of increasing significance in the future, is introduced plants. Water hyacinths (*Eichornia crassipes*) form dense mats on the water surface, making it impossible for the kites to hunt snails. Another exotic, the Australian punktree (*Melaleuca quinquenervia*), is rapidly invading kite habitat in south Florida, changing it from marshes to dense stands of trees.

An in-depth investigation is needed into important habitat elements and habitat carrying capacity. Some work of this nature has been carried out by the Service at Loxahatchee National Wildlife Refuge, and an expansion of this effort into a long-term study is recommended. Recent vegetation mapping and related research by the South Florida Water Management District should also be helpful. Emphasis is needed on determining minimum and maximum water levels for kites, and the ramifications of attempting to store water during wet periods for improving kite habitat during droughts should be explored.

After the habitat is identified and categorized, habitat management plans can be developed. Among the agencies likely to be involved in drawing up and implementing such plans are the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Florida Game and Fresh Water Fish Commission, and various Florida water management districts, together with private organizations such as the National Audubon Society. Although relatively little is currently known about effective management for kites, any measure that would tend to prevent drying-out of kite habitat would be beneficial. Whenever possible, effective management for the kite should be carried out through cooperative agreements. In some cases, purchases of habitat or management easements may be necessary.

Because the kite depends solely upon the apple snail for food, it will be necessary to manage the snail in order to effectively manage kite populations. Some data on this mollusk already are available. For a number of years, the Loxahatchee refuge staff has been studying techniques to increase apple snail production as well as methods to manage foraging habitat for kites. Malacologists from Florida State University conducted a 3-year study (1975-1977) of the reproduction and ecology of the apple snail at Lake Okeechobee and Loxahatchee. But a further broad scale ecological study would provide needed information on the effects of water quality, water level periodicity, and natural enemies on the snail, and on means of achieving high levels of productivity and availability. The most crucial question is if high snail populations in managed areas could effectively offset habitat losses or provide enough food resources during droughts to reduce kite dispersal. If so, snail management might hold the key to the survival of the Everglade kite.

Copies of the Everglade Kite Recovery Plan will be available from the Fish and Wildlife Reference Service. Details on the plan and its implementation can be obtained from the Atlanta Regional Director (see page 2 for address).

New Publications

Ecological Studies of Six Endangered Butterflies (Lepidoptera, Lycaenidae): Island Biogeography, Patch Dynamics, and the Design of Habitat Preserves, by Richard A. Arnold, 1983, is available. This study presents the findings of autecological investigations performed during 1977-79 on five endangered butterflies (Lycaenidae): *Callophrys mossii bayensis*, *Plebejus icarioides missionensis*, *Euphilotes enoptes smithi*, *Euphilotes balfoides allyni*, and *Apon-demia mormo langei*. Preliminary conservation and management strategies are discussed in relation to the theories of island biogeography and patch dynamics. The book can be purchased for \$14.00 (U.S./Canada), or \$16.25 (Export price) from the University of California Press, 2223 Fulton Street, Berkeley California 94720. Include \$1.50 for postage and handling. California residents add 6 or 6½% sales tax.

The proceedings of two international workshops, "The Conservation of Threatened Natural Habitats" and "Management of Large Mammals in African Conservation Areas," are available from the South African Council for Scientific and Industrial Research Comparative Scientific Programmes. To request copies, write: The Coordinator: Nature Conservation Research, CSP, CSIR, P.O. Box 395, Pretoria 0001, South Africa.

The *Liaison Conservation Directory for Endangered and Threatened Species* has been updated (May 1983) and published. This directory lists Federal, State-Territorial, private organizations,

and independent contacts who are cooperating in the U.S. Endangered Species Program. All persons listed in the directory will receive a copy. Others may purchase the directory from the Government Printing Office, Washington, D.C. 20402 (stock number 024-010-00642-1, price is \$5.00).

The U.S. List of Endangered and

Threatened Wildlife and Plants (50 CFR 17.11 and 17.12), reprinted in the July 27, 1983, *Federal Register* (Vol. 48, No. 145, pp. 34182-34196), is now available. Limited copies are available upon request from Office of Public Affairs - Publications, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED				THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only			
Mammals	15	18	223	3	0	22		281	19
Birds	52	14	144	3	0	0		213	40
Reptiles	8	6	55	8	4	12		98	6
Amphibians	5	0	8	3	0	0		16	3
Fishes	29	4	11	12	0	0		56	22
Snails	3	0	1	5	0	0		9	5
Clams	23	0	2	0	0	0		25	0
Crustaceans	2	0	0	1	0	0		3	1
Insects	7	0	0	4	2	0		13	3
Plants	55	2	0	9	1	2		69	9
TOTAL	199	44	444	48	7	36		783	98**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of species currently proposed for listing: 23 animals
17 plants

Number of Critical Habitats determined: 55
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 92
Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

July 30, 1983

August 1983

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Oklahoma Plant Proposed as Threatened

PUBLIC DOCUMENTS
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
SEPTEMBER 1983
OCTOBER 1983
LIBRARY

The long-haired phlox (*Phlox pilosa* var. *longipilosa*), a plant found only in Greer and Kiowa Counties, southwestern Oklahoma, has been proposed by the Service for listing as a Threatened species (F.R. 8/29/83). Habitat loss from quarrying, overgrazing, development, and recreation is the primary threat to the remaining populations.

Phlox pilosa var. *longipilosa* is a perennial, 30-45 centimeters tall, with small, usually opposite linear leaves. It takes its common name from the long, pointed hairs that densely cover the inflorescence, stems, and calyx. The flowers are tubular and rose-purple in color, and there are many flower clusters per stem. Taking of the plant for cultivation as an ornamental could be a potential threat to the species.

This plant is a member of the mid-grass prairie ecosystem, and is restricted to a very small range within the Quartz Mountains, a western extension of the Wichita Mountains in southwestern Oklahoma. Extensive surveys conducted in 1981 by Drs. R.J. and C.E. Taylor have not discovered any populations other than those in Quartz Mountain State Park and a few to the north and west, ranging in size from 5-150 plants. In the eastern section of the park, which has been developed for recreation, grass mowing has damaged that area's *Phlox* population. Some of the populations on

private lands outside the park are jeopardized by quarrying and overgrazing.

Effects of the Rule if Approved

If the rule is approved as published, *Phlox pilosa* var. *longipilosa* will gain the protection authorized for a Threatened species by the Endangered Species Act. Under Section 7 of the Act, Federal agencies will be required to insure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species by directly affecting the plants or by adversely modifying the habitat. A formal designation of Critical Habitat was not proposed since publication of the precise locations of the remaining populations in the *Federal Register*, as required by such a designation, would make the attractive plant more vulnerable to collection; nevertheless, the plant and its habitat will receive protection under Section 7. In the interim, since the plant has been proposed for listing, Federal agencies are required under the Act to informally confer with the Department of the Interior on any action that is likely to jeopardize the species.

All trade prohibitions in 50 CFR 17.71 would apply to *Phlox pilosa* var. *longipilosa*, except for an exemption on seeds from cultivation. Import, export, and

Continued on page 5

Changes Proposed in Listing Procedures

Proposed changes in the procedures to list species as Endangered or Threatened and to designate their Critical Habitat have been published jointly by the Fish and Wildlife Service (Department of the Interior) and National Marine Fisheries Service (Department of Commerce) in the *Federal Register* (F.R. 8/8/83). The proposal would amend Federal regulations (50 CFR 424) to comply with the Endangered Species Act Amendments of 1982.

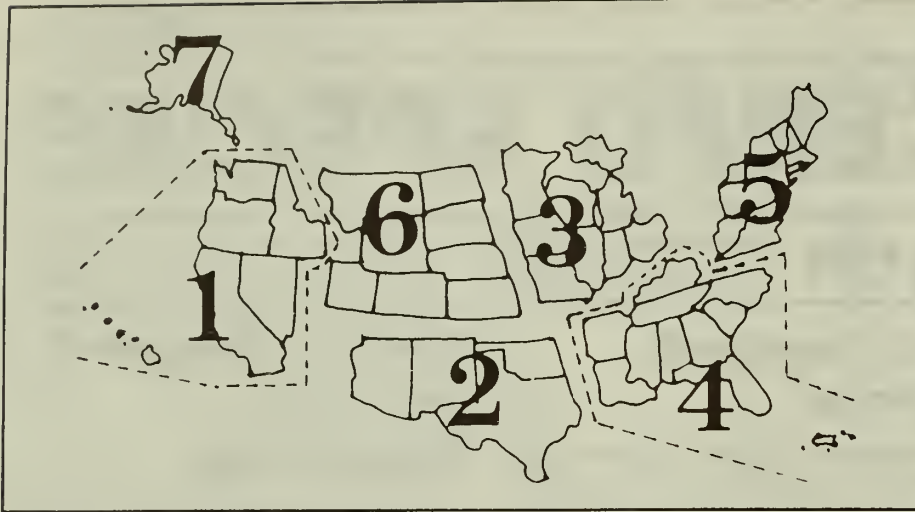
Most of the changes are intended to streamline the listing process. Only scientific information is to be considered during listing decisions, and non-biological factors are not allowed to affect such decisions. After a petition to list, reclassify, or delist a species is received, the Secretary of the Interior (or Commerce, where applicable) must act "to the maximum extent practicable" within 90 days to determine whether or not it contains substantial information that the petitioned action may be warranted. Within a year of receiving a "substantial" petition, the Secretary must publish a proposed rule, a notice that the petitioned action is not warranted, or a notice that the action is warranted but that other listing actions preclude the preparation of a proposal within the specified period. An extension of one year is allowed, but only if the Secretary can demonstrate progress on other listings. Final action on listing or Critical Habitat must now be taken within one year of the proposal, instead of 2 years as previously required. A 6-month extension may be granted if there is substantial disagreement among specialists on the biological data. Extensions are not permissible to allow additional economic or other analyses relating to Critical Habitat designations.

The 1982 Amendments restate the general requirement of concurrent listing and Critical Habitat designations, but authorize listing without the latter in certain circumstances. If a Critical Habitat designation is found "not prudent,"

Continued on page 8



The main threats to the long-haired phlox are quarrying, grazing, and other forms of habitat disturbance.



Endangered Species Program regional staffers have reported the following activities for the month of August:

Region 1—California least tern (*Sterna antillarum browni*) activity at Seal Beach National Wildlife Refuge (NWR) increased in late June and July, but

remained lower than in the past few years.

Two chicks are known to have fledged, exceeding last year's production of one fledgling. By July 21, however, a check revealed no activity on NASA Island. No birds were using the island and no nests

were found. Since the nesting at all other sites is rapidly terminating, it is doubtful that any additional California least tern activity will occur on NASA this season.

Idaho and Nevada agents participated in the first interagency grizzly bear (*Ursus arctos horribilis*) patrols in the Yellowstone ecosystem. Horse patrols with Wyoming Game and Fish Department wardens located three illegal bear-bait sites; two were located in Idaho and one barely into Wyoming. This illegal activity occurred in one of the areas most critical to the grizzly bear.

At a July 9 meeting, the California Condor Recovery Team decided to reiterate its support for the proposed acquisition of the Hudson Ranch, which is being considered for special appropriation by key congressional committees. The 11,500-acre cattle ranch is located in the southern San Joaquin foothill area, and is the most heavily used California condor (*Gymnogyps californianus*) foraging area. Virtually every condor gathers here in late summer and early fall. This may be of considerable significance since food is available in other parts of the condor range at the same time, yet they seem to gather in this one area annually. The ranch has been proposed for subdivision into small "ranchettes," which would make the area unsuitable for condors. Undivided, the ranch could make an ideal location for reintroductions of captive-reared condors.

At the same meeting, the team agreed to encourage the Service and the California Fish and Game Commission to allow the removal of two 1983 nestlings from the wild for captive breeding and to ensure egg laying by the parents of these two chicks in 1984. (See the condor story in this BULLETIN.)

Cui-ui (*Chasmistes cujus*) recovery efforts continued to be impeded by problems in the Pyramid Lake Fishway. Last winter, fishery biologists with the Service's Great Basin Complex, along with engineering personnel from the Service's Portland Regional Office, designed and installed a fish ladder that they thought would solve the cui-ui passage problem. Superficial tests indicated, however, that most cui-ui and Lahontan cutthroat trout (*Salmo clarki henshawi*) exposed to the ladder would not pass through it; they simply held in position or fell back. The personnel did not conduct extensive tests of the ladder because the cui-ui spawning run already had started.

Our analyses of this ladder design revealed two problems. The first was associated with cutthroat trout, which did not seem to want to use the opening near the bottom of the ladder, but instead

Continued on page 6

**U.S. Fish and Wildlife Service
Washington, D.C. 20240**

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RULEMAKING ACTIONS

Amargosa Vole Proposed as Threatened

The Amargosa vole (*Microtus californicus scirpensis*), a small mammal currently found only in a few isolated marshes in Inyo County, California, has been proposed by the Service for listing as an Endangered species (F.R. 8/29/83). Human alteration of fragile desert wetland habitat, along with burning and overgrazing, have eliminated the vole from portions of its limited range. Not long after its discovery in 1900, the vole became so rare that it was thought to be extinct, but it was rediscovered several years ago.

The historic range of the Amargosa vole is probably the most restricted of any of the 17 currently recognized subspecies of *M. californicus*, the widespread California vole. It has been recorded only from small marshes scattered along the Amargosa River in southeastern Inyo and northeastern San Bernardino Counties, California. The marsh vegetation provides cover for escape from predators and serves as a food source. Marshes inhabited by the Amargosa vole are dominated by the bulrush (*Scirpus olneyi*) and have some open water nearby. Such habitat characteristics are limited in this arid region to the vicinity of springs or those portions of the Amargosa River with permanent flow. Throughout most of its course, the river is dry.

In the Amargosa Desert, most human development is concentrated in the few areas near permanent water sources, resulting in considerable modification of marsh habitat. For example, diversion and channelization of the spring at the town of Shoshone for construction of a swimming pool extirpated the Amargosa vole from its type locality. The development of Tecopa Hot Springs for mineral baths and the spread of mobile home courts have greatly modified and even destroyed vole habitat in that area. Such factors contributed to the extinction of another endemic species, the Tecopa pupfish (see the February 1982 BULLETIN).

Effects of the Proposal if Approved

If the proposal is adopted as published, the Amargosa vole will be listed as an Endangered species and will benefit from the conservation measures authorized under the Endangered Species Act. Taking, possessing, or engaging in interstate or international trafficking of the Amargosa vole would be among the prohibitions in 50 CFR 17.21. Permits for otherwise prohibited activities could be issued, under 50 CFR 17.22 and 17.23, for certain scientific, conservation, or economic hardship purposes. The Amargosa vole already is listed by the State of California as an endangered species, a

status which protects the animal but not its habitat.

Under Section 7 of the Act, Federal agencies would be required to ensure that any activities they fund, authorize, or carry out are not likely to jeopardize the continued existence of the Amargosa vole or adversely modify its Critical Habitat. The Critical Habitat proposed for the vole consists of marshes, together with associated land and water areas, along the Amargosa River from just north of Tecopa Hot Springs to the Amargosa Canyon (just south of the nearby town of Tecopa). A designation of Critical Habitat does not necessarily prohibit any particular activity. Rather, it means that Federal agencies must consult with the Fish and Wildlife Service so that jeopardy, if any, to the species can be avoided. Until a final decision on the listing proposal is made, such agencies are required to confer with the Service.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and are due to the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 Northeast Multnomah Street, Portland, Oregon 97232 by October 28, 1983. Requests for a public hearing are due by October 13.

Two Ash Meadows Fishes Listed in Final as Endangered

Two desert fishes endemic to the unique and diverse ecosystem of Ash Meadows, Nevada, have been listed as Endangered species (F.R. 9/2/83). The Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*) and Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) had been listed temporarily as Endangered since May 10, 1982, under two consecutive emergency listings. Imminent land development for housing subdivisions, clearing of land for road construction and agricultural purposes, pumping of groundwater, and diversion of surface flows threaten the species' fragile desert wetland habitat. (For more information on Ash Meadows, its endemic fauna and flora, and threats to the habitat, see the September 2, 1983, *Federal Register* notice or the feature in the June 1982 BULLETIN.)

Concurrent with the second emergency listing (January 5, 1983), the Ser-

vice proposed giving permanent protection to the two species and their habitat. Public hearings on the proposal were held in Las Vegas, Nevada, on February 11, and in Amargosa, Nevada, on May 26. Comments were received from 50 parties, including individuals, organizations, and government agencies, 37 of which were in favor of the action. The Nevada Department of Wildlife was one of the agencies that commented in support. No scientific evidence was submitted that the proposed final listing was not warranted.

Effects of the Listing Rule

Taking, possessing, and interstate/international trafficking in the two Endangered fishes are prohibited under 50 CFR 17.21. Certain exceptions apply to agents of the Service and State conservation agencies. Permits to carry out

otherwise prohibited activities may be granted, in certain circumstances, under 50 CFR 17.22 and 17.23.

This rule could subject the construction activities of the major development corporation in Ash Meadows to enforcement actions undertaken pursuant to Section 9 of the Endangered Species Act or to civil injunction should construction result in the taking of any of the listed fishes.

The habitat of the Endangered fishes will be further protected under Section 7 of the Act, which requires Federal agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or adversely modify their Critical Habitat. The designated Critical Habitat for the two newly listed fishes consists of about 200 acres distributed among a number of springs and their outflows.

Change in Status Proposed for Two Butterflies

The status of two tropical butterflies under the Endangered Species Act would be changed by a rule recently proposed by the Service (F.R. 8/29/83). One of these insects, the Bahama swallowtail (*Heraclides [=Papilio] andraemon bonhotei*), is now thought to be only an occasional migrant to south Florida from a more stable foreign population. Therefore, it has been proposed for delisting, which would remove it from the provisions of the Act. The Schaus swallowtail (*Heraclides [=Papilio] aristodemus ponceanus*), on the other hand, is a permanent resident of the U.S., and its numbers have declined to the point that the Service has proposed changing its legal status under the Act from Threatened to Endangered.

Background

Both butterflies occur in Dade and Monroe Counties, and are representatives of tropical species that reach their limits of distribution in southern Florida. They were listed in 1976 as Threatened species. A review of their status was initiated 5 years later, as required by the Act, and a notice to this effect was published in the February 27, 1981, *Federal Register*. The Florida Game and Fresh Water Fish Commission then carried out research, funded in part by Federal grants provided under Section 6 of the Act, on both butterflies. (The proposal to change the status of these butterflies is consistent with a petition filed with the Service on March 9, 1983, by the Florida Game and Fresh Water Fish Commission.)

According to the data gathered during this study, the Bahama swallowtail butterfly is not a permanent resident of the U.S., and is not subspecifically distinct from the *Heraclides andraemon* found throughout the Bahamas. Although its habitat is vulnerable to development and hurricane damage, there is no informa-

tion indicating a threat to the butterfly throughout all or a significant portion of its range at this time. The Bahaman segment of the population provides the species with insurance against the possibility of extinction.

Unfortunately, the Schaus swallowtail appears to be in a much worse condition. This butterfly originally occurred in Florida from the Miami area south through the keys as far as Lower Matecumbe Key, but the known current range has shrunk to Elliott and Old Rhodes Keys in Biscayne National Park (Dade County) and to north Key Largo (Monroe County).

Habitat loss was probably the main factor in the decline. Both the Schaus and Bahama swallowtail butterflies are restricted to tropical hardwood hammocks, the climax vegetation type of upland areas in the Florida Keys and parts of southern peninsular Florida. These hammocks are closely related floristically to those of the West Indies. As the only tropical upland plant community found in the continental U.S., they contain many plant species rare in Florida. In the keys, the hammocks are highly subject to development pressures since local, State, and Federal laws limit development in lowland (mangrove) areas. In addition, large amounts of insecticides mixed with diesel fuel are applied for mosquito control, and these chemicals could adversely affect the Schaus swallowtail. Not only is the butterfly's habitat growing more vulnerable to human activities but, as its range becomes more limited and fragmented, the chance increases that a single hurricane could destroy the remaining population. Overcollecting is another potential threat.

Effects of the Proposal if Approved

If the proposed rule is approved as published, the conservation measures and prohibitions authorized under the Endangered Species Act of 1973, as amended, would no longer apply for the Bahama swallowtail butterfly. This Federal rule change would not affect the protection given both the Bahama and Schaus swallowtail by the State of Florida, which prohibits taking, possessing, selling, or transporting these species except by permit.

Whether or not the Schaus swallowtail is reclassified to Endangered, the existing prohibitions on taking and interstate/international trafficking will remain in effect for this butterfly. Habitat protection under Section 7 will also continue for the Schaus swallowtail, even though designating Critical Habitat was not deemed prudent because publicizing the

location could make the species more vulnerable to illegal collecting.

The primary benefit to the butterfly of a reclassification would be the possibility of giving increased emphasis to its recovery needs under the Service's recovery priority system. A change to Endangered would also more accurately reflect its current biological status, increase public awareness of its plight, and preclude any potentially adverse effects from overcollecting.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and are due to the Endangered Species Field Supervisor, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207 by October 28, 1983. Public hearing requests must be received by October 13.

Habitat Description Notice on Green Pitcher Plant

To satisfy the terms of a settlement reached in litigation over the listing of the green pitcher plant (*Sarracenia oreophila*) as Endangered, and to help alleviate public concern about the effects of the listing, the Service has published a notice further describing the habitat of this plant (F.R. 8/12/83). This is an informational notice only and does not designate Critical Habitat as defined in Section 4 of the Endangered Species Act.

The green pitcher plant is a carnivorous plant occurring in a number of small sites in Alabama and Georgia. Due to habitat loss and overcollection, it was listed on September 21, 1979, as an Endangered species (see the October 1979 BULLETIN). In September 1980, a lawsuit was filed against the Secretary of the Interior and the Director of the U.S. Fish and Wildlife Service alleging that the listing was invalid on procedural grounds. The Department maintained that the listing complied with all applicable statutory and regulatory requirements. In November 1981, both parties and the court agreed to a stay of the suit for one year, during which time a recovery plan for the species was developed and settlement negotiations occurred. A settlement was reached in May 1983, and one of the stipulations required the Service to further describe for the public the general geographic location, habitat, and distribution of the green pitcher

Continued on page 8



Photo by George Krizek

The Schaus swallowtail butterfly population in the United States continues to decline due to the loss of habitat and other threats.

Minnesota Wolf Regulations Amended

The Federal regulations governing management of the gray wolf (*Canis lupus*) in Minnesota, a species which is classified as Threatened in that State, have been amended (F.R. 8/10/83). This revision will allow a limited, controlled taking of wolves by the public, as well as by designated Federal and State agents. The Fish and Wildlife Service's current wolf depredation control program also will be modified. Sales of tagged Minnesota wolf parts will be permitted in interstate and international commerce. Wolf densities in the affected management zones within Minnesota will be maintained at or above the levels recommended in the Eastern Timber Wolf Recovery Plan.

In response to comments on the proposed rule, as published in the July 14, 1982, *Federal Register*, several changes were made in the final rule. Until a stable wolf population is established in Wisconsin, wolves may not be taken, other than in direct response to depredation, in the areas of Minnesota from where wolves are beginning to colonize northern Wisconsin, unless depredation in those areas becomes chronic. The regulations also have been modified to make it clear that they do not authorize trade in living wolves. Further, the effective date of the final rule will be delayed for 60 days from the publication date, during which time the Service will seek modification of the order entered by the United States District Court for the District of Minnesota in *Fund for Animals v. Andrus*, Civil No. 5-78-66 (decided July 25, 1978; supplementary decision filed August 31, 1978).

Background

At one time, the gray wolf was present in nearly all of the conterminous 48 States, as well as in Alaska, Canada, and Mexico, but habitat destruction and persecution as a predator radically reduced the species' range and numbers. Today, the gray wolves in northern Minnesota comprise the last significant population of the species south of Canada. This population has been relatively stable since about 1918, due in part to the fact that the numbers are, to some extent, self-regulating. Another contributing factor to the species' stability—perhaps the principal factor—is the continued relatively undeveloped nature of the wolf's primary habitat in northern Minnesota. At present, biologists estimate that there are 1200 or more wolves in Minnesota.

To assist in conserving this last population, the gray wolf in Minnesota was originally listed (under the name Eastern timber wolf, *C. l. lycaon*) as Endan-

gered in 1967. Eleven years later, the Eastern Timber Wolf Recovery Team described the steps it believed necessary to restore the wolf to the point where it would no longer require special protection under the Endangered Species Act. In recognition of the fact that the species faced different problems in different areas of Minnesota, the approved recovery plan contained a suggestion that the State be divided into five zones and that the wolves be managed at prescribed densities. As part of an overall management system, the team recommended "a combination of protection and regulated taking, so as to minimize depredation on livestock, illegal killing of wolves, and vilification of the species. . . ." The team's recommendations were accepted in principle, but the Service implemented a depredation control effort that would operate in response to specific complaints rather than to establish a regulated taking program. This approach was reflected in the 1978 regulations that reclassified the wolf in Minnesota as a Threatened species.

The Service now has modified the previous taking prohibitions, bringing them in closer conformance with the recovery team's recommendations by permitting the State of Minnesota to authorize controlled taking of wolves by the public and/or designated wildlife managers, primarily in areas where depredations have been recurrent and have not been dealt with adequately by the former depredation control system. This authorization provides that wolf densities will be maintained at or above the levels determined by the plan as "optimum." In 1982, the State of Minnesota agreed to adopt the recovery team's wolf density figures as its minimum acceptable level. Equally significant and essential was the State's agreement to work under the limits and safeguards of the Service's depredation control program. The current control system will be amended to authorize designated State and Federal agents to kill any wolf caught within one-half mile of a farm upon which confirmed wolf depredations have taken place. Wolves of all age classes, including pups-of-the-year, that are captured in traps may be killed.

In response to the July 14, 1982, proposed rule change, the Service received and considered 1,437 letters (as of October 4, 1982). Of that number, 1,398 opposed the rule. The Service also received two petitions: one containing 3,873 signatures in opposition to the proposal, and the other 231 in favor of it. At a public hearing in Minneapolis, 15 persons testified, most of them in opposition. However, at the public hearing at

International Falls (northern Minnesota), 35 testified, most of them in favor of the proposal. The most extensive and detailed comments were those submitted on behalf of 10 organizations that are opposed to the rule. A summary of these comments and the Service's responses can be found in the final rule.

The U.S. District Court in Minnesota issued an injunction in 1978 in the *Fund for Animals v. Andrus* litigation that modified the 1978 rule reclassifying the wolf in Minnesota as Threatened. To ensure that no conflict will occur with the 1978 court ruling, the Service will approach the court and move to modify the injunction. The Service has delayed the effective date of the revised rule for 60 days after the publication date so that the court has an opportunity to rule on the Service's motion.

Oklahoma Plant

Continued from page 1

interstate trafficking in the plant would be illegal for persons under U.S. jurisdiction. Permits to carry out otherwise prohibited activities, under certain circumstances, are provided for in 50 CFR 17.72.

Section 9(a)(2)(B) of the Act, as amended in 1982, makes it illegal to remove and reduce to possession Endangered plants from areas under Federal jurisdiction, and regulations extending this protection to Threatened plants have been proposed. (Again, permits for certain exceptions are possible.) Although *Phlox pilosa* var. *longipilosa* is not now known to occur on Federal lands, herbarium specimens were collected in 1937 from Wichita Mountains National Wildlife Refuge to the east in Comanche County. If populations should be found on the refuge, all of the above prohibitions would apply. Further, since the refuge apparently is within the species' historic range, it could be a site for future reintroduction as part of an approved recovery plan. Such plants also would be protected.

Public Comment Requested

Comments on the proposed rule to list *Phlox pilosa* var. *longipilosa* as a Threatened species are requested from all interested agencies, organizations, and individuals. These comments must be received by the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 by October 28, 1983. Requests for a public hearing on the proposal are due by October 13.

Regional Briefs

Continued from page 2

to jump over the weir. The second problem involved the cui-ui. The bottom opening created turbulence that eliminated rest space essential to the cui-ui while moving through the ladder. We plan to modify the ladder this fall to eliminate these problems.

Great Basin Complex personnel continued field activities associated with the cui-ui life history study. Since early June, they have systematically fished the Pyramid Lake Fishway with plankton nets for young cui-ui. The young cui-ui first appeared in the fishway in early June. Movement of these fish to Pyramid Lake continued through the month of July. Most fish captured were produced in the downstream end of each fishway ladder. The fishway will remain open until the majority of young cui-ui have moved to Pyramid Lake.

Another field activity associated with the cui-ui life history study this month was the securing of substrate samples from known cui-ui spawning areas. These samples are currently being analyzed for relative particle size composition.

* * *

The Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) and Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*) populations, which are found in several springpools in Ash Meadows, were estimated during a cooperative effort between the Great Basin Complex and the Nevada Department of Wildlife. The results give valuable indications of the relative population size associated with each spring.

* * *

Region 2—A proposal prepared by the Arizona Game and Fish Department (AGFD) to initiate studies on the Sonoran pronghorn (*Antilocapra americana sonoriensis*) has been approved. The study will be conducted by the AGFD, with additional funding coming from the Service, Luke Air Force Base, and Shikar Safari. Work should begin in September 1983, with the first attempt to capture and radio-collar animals expected to take place in late November 1983.

* * *

An 8-month old female ocelot (*Felis pardalis*), was captured and radio-collared on Laguna Atascosa NWR, in extreme southeastern Texas. The presence of the kitten was determined last December when it was observed that one of the recaptured adult female ocelots was lactating. Researchers conducting the project had been waiting for the kitten to obtain sufficient size to be radio-collared. It was captured on the first attempt and weighed in at 11.5 pounds. The ocelot study being con-

ducted in south Texas will continue through 1984.

* * *

A Whooping Crane Recovery Team meeting was held in the Albuquerque Regional Office in August. The 1983 population looks very good. At least 24 mated pairs of whooping crane (*Grus americana*) were found in Wood Buffalo National Park (Canada), and this population produced 12 young. Twenty-eight whooping crane eggs were placed under foster sandhill crane (*Grus canadensis*) parents in the Gray's Lake NWR experimental flock (12 eggs from the Patuxent Wildlife Research Center, 16 eggs from Wood Buffalo National Park). It appears that we should have 18-19 chicks in the 1983 cohort. Eighteen of those chicks were banded and, of that number, 11 were also radioed. There are 12 sub-adult whoopers already in the Gray's Lake flock.

* * *

In conjunction with the U.S./Mexico Joint Agreement on Wildlife Conservation, call-count surveys conducted this summer in Sonora, Mexico, indicated that the last remaining wild population of masked bobwhite (*Colinus virginianus ridgwayi*) is apparently still viable at Rancho Grande. About 100 additional calling males were counted. Masked bobwhite populations are believed to fluctuate widely in response to variations in summer rainfall. Summer rains in central Sonora have been favorable both this summer and last, and may explain the apparent population increase.

Region 3—Regional and Washington Office endangered species personnel met recently with representatives of the U.S. Forest Service (USFS) to discuss mutual concerns about wildlife and endangered species. This was part of the USFS annual evaluation... The Regional staff also met with The Nature Conservancy to review data collection and relationships with State programs... Final regulations on wolf management in Minnesota were published (see story in this BULLETIN).

Region 4—In our December 1982 Regional Brief, we reported on a cave gate project at New Mammoth Cave, Campbell County, Tennessee. The gate was constructed to prevent human disturbance of hibernating Indiana bats (*Myotis sodalis*). The project was a cooperative effort involving the cave owner and volunteers who assisted in constructing the gate. Our Asheville, North Carolina, Endangered Species Field Station has recently completed the following analysis of the benefits of this project:

In 1962, New Mammoth Cave supported a hibernating Indiana bat population of 4,000 individuals. By 1982, however, the number had decreased to only 710. The Indiana bat is very sensitive to

human disturbance, and the tremendous decline in New Mammoth's bat population was linked directly to increasingly frequent human disturbance throughout the 1960s and 1970s. The draft Indiana Bat Recovery Plan recognized the significance of this cave to the recovery of the Indiana bat, and recommended that a gate be constructed at the cave to prohibit unauthorized human entry while permitting the bats unrestricted access.

In 1982, the Service entered into a cooperative agreement with the landowner (Dr. Charles Wilkens of Jellico, Tennessee) to protect this cave and the Endangered Indiana bats that hibernate there. During August 1982, the Service, with the assistance of several volunteer organizations, constructed a gate at the entrance to the cave. The volunteers supplied most of the construction equipment and labor needed for the project. More than 25 volunteers were involved over 2 days. Without the assistance of these volunteers, the gate would have cost the Service much more. Using a cooperative agreement with the landowner was by far the most cost-effective means of accomplishing the Service's objectives of protecting this colony of Endangered bats. For further information or input on this project, please contact Bob Currie at the Asheville Office (FTS 672-0321; commercial 704/258-2850 extension 382).

Region 5—Regional Director Howard Larsen recently signed a cooperative agreement with the Province of Manitoba, Canada, which will provide a minimum of six bald eaglets (*Haliaeetus leucocephalus*) during the next 3 years for translocation to the U.S. In turn, Manitoba will be able to conduct additional bald eagle surveys to ensure that the birds to be translocated will be taken from the most productive areas.

Region 6—The second meeting of the Interagency Grizzly Bear Committee (IGBC) was held in Denver on August 17, 1983. The agenda included a discussion on the membership and responsibilities of the various subcommittees and reports from the subcommittees on their activities. Attendees included regular IGBC members and subcommittee chairman, as well as several invitees. The next IGBC meeting is scheduled for November 8-9, 1983, in Denver.

* * *

The Service recently held workshops on black-footed ferret (*Mustela nigripes*) survey techniques in several areas throughout Region 6, including Moab, Utah; Grand Junction, Colorado; Dinosaur National Monument, Colorado; Wall, South Dakota; and Billings, Montana. The purpose of the workshops, which were attended by representatives from both State and Federal wildlife and land management agencies, was to educate field personnel on how to recognize

ferret sign and conduct ferret surveys. Max Schroeder of the Service's Denver Wildlife Research Center, Fort Collins, Colorado, conducted the workshops, which included classroom instruction on general ferret biology and ferret sign as well as an update on studies being conducted on the Meeteetse, Wyoming, population. Attendees also examined actual specimens, skulls, and pictures of ferrets or ferret sign, and were given instruction on conducting ferret surveys. The workshops were viewed as informative and invaluable by all of those who participated. Additional workshops are planned for Fiscal Year 1984.

On August 1, 1983, U.S. District Judge John L. Kane, Jr., upheld the U.S. Army Corps of Engineers' right to block construction of a dam on Wildcat Creek near Brush, Nebraska. The creek is a tributary of the South Platte River which provides important whooping crane habitat along 53 miles of the river from Grand Island to Kearney, Nebraska. The River-side Irrigation District and the Public Service Company of Colorado had filed suit against both the Service and the Corps regarding the proposed Wildcat Reservoir when the Corps, after reviewing a Service study, denied a permit to build the dam. A biological opinion issued by the Service stated that the dam would likely jeopardize the continued existence of the whooping crane and adversely modify its Critical Habitat in Nebraska. By upholding the Corps' decision to

deny the permit, the judge ruled that such action was a proper exercise of Federal power in a manner required by Federal statutes.

The Nebraska Association of Resource Districts has placed a resolution on its 1983 conference agenda calling for the U.S. Department of the Interior to re-evaluate its designation of whooping crane Critical Habitat on the South Platte River to facilitate continued development of irrigated cropland in the State.

Region 7—Aleutian Canada goose (*Branta canadensis leucopareia*) recovery activities have been completed for the 1983 field season. Arctic fox (*Alopex lagopus*) control efforts in the eastern Aleutian Islands resulted in the virtual elimination of these introduced predators from 12,425-acre Amukta Island. If Amukta Island is fox-free, geese from nearby Chagulak Island may be able to pioneer there. In the western Aleutians, a survey was conducted on 68,598-acre Kiska Island. Kiska, an island targeted for reintroduction of Aleutian geese, has an estimated exotic fox population of 700. It is uncertain whether foxes can be removed from an island this size with the use of the chemical control agents currently available. A week-long effort on Buldir Island by Endangered Species and Aleutian Islands NWR staff members resulted in the capture of 108 geese (31 adults and 77 young). The geese were successfully transported to Agattu Island and released there. Confirmation of nesting on Agattu Island remains elusive

despite spring observations of several birds there in both 1982 and 1983.

Results of American and Arctic peregrine falcon surveys in Alaska are now available (*Falco peregrinus anatum* in interior Alaska and *F. p. tundrius* on the North slope). In interior Alaska, five areas were surveyed. The upper Yukon, the lower Yukon, the Tanana, Porcupine and Kuskokwim River study areas comprise approximately 1500 river miles. A total of 102 pairs of *F. p. anatum* were observed and, of these, 79 pairs produced 177 young. This compares with 1982 figures of 87 pairs, of which 63 pairs produced 159 young. On the North Slope of Alaska, the Colville and Sagavanirktok Rivers were surveyed—a total of approximately 300 river miles. Twenty-eight pairs of *F. p. tundrius* were observed and, of these, 21 pairs produced 65 young. This compares with 1982 figures of 32 pairs, of which 20 pairs produced 52 young. Eight adult falcons were trapped near eyries this year on the upper Yukon and Tanana Rivers. As in 1982, we observed an unusually high turnover rate (about 45 percent) of adults in the breeding population.

Four short-tailed albatrosses (*Diomedea albatrus*) were observed in Alaskan waters this summer. Once common throughout the north Pacific, these birds are now only rarely seen away from their breeding islands in Japan.

CITES News — August 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate

Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these

species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Proposed Rule on CITES Appendix II Exports

A proposed rule on export of certain animals on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for the 1983-1984 and subsequent seasons has been published by the Service (F.R. 8/18/83). It contains two significant changes for the species involved. The proposed rule is accompanied by an explanation of proposed

findings by the U.S. CITES Management and Scientific Authorities on export of the bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), American alligator (*Alligator mississippiensis*), and Alaskan populations of the gray wolf (*Canis lupus*) and brown or grizzly bear (*Ursus arctos*).

The first change is that, beginning this year, the Service intends to make export findings to span a period not limited to a single harvest season. Previously, such export findings were made each year on a State-by-State basis. The States from which each of the species would be approved for export are listed in the August 18 Federal Register notice.

Another change is the status of these species on Appendix II of CITES. As a

result of a 10-year review of the CITES appendices, the Service determined that the populations of the listed furbearers in the notice are now considered as listed on Appendix II "only because of similarity in appearance to other listed species, subspecies, or geographically separate populations." The 1983 Conference of the Parties in Botswana adopted a resolution accepting the report of the CITES Central Committee on the 10-year review, which includes recommendations that these populations of furbearers should be considered as listed on Appendix II only for this reason.

For the past 7 years, the U.S. Scientific Authority (SA) has reviewed information on population status, management, and

Continued on page 8

Changes Proposed

Continued from page 1

the listing can become final at any time within the required period. When data indicate that a prompt listing is essential for conservation of a species but that the analysis necessary to designate Critical Habitat has not been completed, the listing must be made final within the required period without the Critical Habitat designation; the Critical Habitat segment of the proposal should then be completed separately as soon as possible within an additional year.

Among other changes in the proposed rule are a consolidation of the requirements for public hearings and public meetings, and a requirement for written explanations of any rules adopted over the objections of a State or of any not adopted when petitioned by a State.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and are due to the Associate Director—Federal Assistance, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (Attention: Listing Regulations) by October 7, 1983.

Pitcher Plant

Continued from page 4

plant. (The Service previously had provided this information at a 1980 public meeting in Alabama.) It is hoped that the information contained in the notice will allay concern that the listing could affect economic growth and development in the region.

The green pitcher plant once occurred throughout the coastal plain and piedmont of Alabama and Georgia, as well as in central Tennessee. Currently, its known distribution consists of 18 sites in northeastern Alabama and one in northeastern Georgia, with a combined area

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	19
Birds	52	14	144	3	0	0	213	40
Reptiles	8	6	55	8	4	12	98	6
Amphibians	5	0	8	3	0	0	16	3
Fishes	29	2	11	12	0	0	56	23
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	1
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	9
TOTAL	199	44	444	48	7	36	783	110**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of species currently proposed for listing: 21 animals
17 plants

Number of Critical Habitats determined: 55

Number of Recovery Plans approved: 99

Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

September 2, 1983

of less than five acres. A factor common to all of the sites is high soil moisture, which makes them generally less desirable or even unsuited for development or intensive agriculture. The general areas occupied by the plant are indicated in the *Federal Register* notice, but exact locations were not published due to the possibility of increased collection.

Cites News

Continued from page 7

trade for these animals in every State where they are harvested. This accumulated information demonstrates that the species are not now potentially threat-

ened and that they could, in fact, be removed from Appendix II if it were not for the problems of similarity in appearance. The SA believes, therefore, that export will not be detrimental to the species taken in the States specified in the notice. Marking the pelts with tags bearing the name of the species and the issuance of export permits naming the species being traded would suffice to address problems of distinguishing among similar species. The SA will continue to monitor the status of the furbearers named in the August 18 notice.

Comments on the proposed rule and findings were accepted until September 19, 1983.

September 1983

Vol. VIII No. 9

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Kentucky Cave Shrimp Listed as Endangered

The Kentucky cave shrimp (*Palaemonias ganteri*), a small freshwater crustacean known only from the Flint-Mammoth Cave System in southcentral Kentucky, has been listed as an Endangered Species (F.R. 10/12/83). Ground water contamination is the primary threat to the single known population. The species' low numbers and restricted range magnify its vulnerability to extinction from habitat pollution.

The Kentucky cave shrimp is one of only two species in the genus *Palaemonias*, and one of only three species in the family Atyidae found in North America north of Mexico. Its reduced eyes and lack of pigmentation indicate a long history of subterranean existence. The only known population, estimated at 500 individuals, inhabits streams in the base (lowest) level of the Flint-Mammoth Cave System within Mammoth Cave National Park. These waters are characterized by abundant quantities of organic matter with sediments of sand and coarse silt.

Contamination of the groundwater flow to the Kentucky cave shrimp habitat from several nearby communities that have inadequate sewage treatment facilities, or that lack such facilities altogether, is the primary threat to the species. A potential danger is the entry into the groundwater system of pollutants from traffic accidents and roadside businesses. For example, in a 1980 incident, a truck carrying toxic cyanide salts overturned on a highway just south of the park.

Service action for the conservation of the Kentucky cave shrimp began when it was included in an April 28, 1975, *Federal Register* notice of review on the status of 57 freshwater crustaceans. It was first proposed for listing on January 12, 1977, as Threatened, but the proposal was withdrawn because of deadlines imposed by the 1978 amendments to the Endangered Species Act. On March 28, 1980, the Service published a notice announcing acceptance of a petition

submitted by Dr. Raymond W. Bouchard to list the Kentucky cave shrimp as Endangered or Threatened. A proposed listing as Endangered with Critical Habitat was then published on October 17, 1980, and a public meeting on the proposal was held in Bowling Green, Kentucky, on December 10, 1980. Final action was delayed pending results of research sponsored by the National Park Service (NPS) and the Fish and

continued on page 4



The Roaring River passage (above) of Mammoth Cave is one of the areas inhabited by the Kentucky cave shrimp. It is part of the Flint-Mammoth Cave System, which is the most extensive cave system known.

Eight More Ash Meadows Species Proposed as Endangered

Seven plants and one insect found only within the Ash Meadows region (Nye County, Nevada, and Inyo County, California) have been proposed by the Service for listing as Endangered species (F.R. 10/13/83). Imminent land development for housing subdivisions, clearing of land for road construction and agriculture, pumping of ground water, and diversion of surface flows directly threaten the species' fragile habitat with destruction.

Background

Ash Meadows, a valley about 110 km

northwest of Las Vegas, is a unique and diverse desert wetland ecosystem within one of the most arid regions of the world (average annual rainfall only 70 mm). (See the Ash Meadows feature in the June 1982 BULLETIN.) A limited amount of water is provided by several dozen small springs and seeps which are fed by an aquifer formed more than 10,000 years ago when water was more plentiful. The area contains the highest number of endemic animals and plants in the continental United States, most of which depend on the maintenance of these wetlands for their survival. All

eight of the species in the proposed listing rule are among those occurring only in the Ash Meadows area:

- *Centaurium namophilum* var. *namophilum* (spring-loving centaury) is an erect annual up to 4.5 dm (about 18 inches) in height with pink flowers. It grows in moist clay soils along streambanks and in seepage areas.
- *Grindelia fraxino-pratensis* (Ash Meadows gumplant) is an erect biennial or perennial reaching up to a meter in height with yellow inflo-

continued on page 8



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of October:

Region 1—Refuge staff members participated in the fall Hawaiian stilt (*Himantopus himantopus knudseni*) recruitment count on September 26, 1983, with State biologists. Preliminary

results indicated a substantially higher percentage of young at James Campbell National Wildlife Refuge (NWR) than last year (36 percent, up from 20 percent), but counts at Hanalei NWR showed an equally significant drop in reproduction.

A Cooperative Agreement between

the Service and the Citizens Utilities Company of Kauai (Kauai Electric Company) has been developed. The agreement would allow Kauai Electric to purchase, install, and maintain \$21,000 worth of streetlight shades. The Newell's Townsend (formerly manx) shearwater, or 'a'o (*Puffinus auricularis newelli*), is attracted to lights, and the installation of shades is expected to help decrease "fallout" (i.e., attraction and collision)—a major morality factor for this Endangered seabird.

In April of this year, the Bureau of Reclamation (BR) and the Fish and Wildlife Service signed a joint Memorandum of Understanding to: 1) support the BR's mandate to resolve the Truckee-Carson River Basin's water use conflicts, and 2) recognize the need for both agencies to complete studies that will accurately predict the amount of Truckee River instream flow necessary for the conservation of cui-ui (*Chasmistes cujus*) and Lahontan cutthroat trout (*Salmo clarki henshawi*). The BR asked us for assistance in determining instream flow regimes required for the recovery of these species.

The best method is the incremental methodology developed by the Cooperative Instream Flow Group; however, this approach requires more specific knowledge than is available. Because of this inadequacy, we relied on field observation of spawning and on computer simulation of unregulated river flows to develop an interim estimate. This revealed that 420,000 acre-feet of water with a 50 percent exceedance is needed. We emphasized in our report to BR that this flow regime is our best estimate with the existing data. With the accumulation of additional data, we will be able to refine this regime. Such refinement will probably show that, as the lower river is rehabilitated, the flow requirements will decrease.

The Service entered into another Cooperative Agreement, this one with the University of California at Berkeley, Department of Forestry and Resource Management, to undertake studies of the Endangered San Clemente Island loggerhead shrike (*Lanius ludovicianus mearnsi*). The shrike population has been estimated at fewer than 25 individuals. Although the reasons for their decline are unclear, one of the most pressing problems is the apparent competition with the American kestrel (*Falco sparverius*). Research will be undertaken by the university, under the guidance of Dr. Michael Morrison, to provide management recommendations for the recovery of the shrike.

A field trip to populations of the MacFarlane's four-o'clock (*Mirabilis macfarlanei*) continued on page 10

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Chihuahua Chub Listed as Threatened

The Chihuahua chub (*Gila nigrescens*), a small fish restricted to a few intermittent streams and pools in southern New Mexico and northern Chihuahua, Mexico, has been listed by the Service as a Threatened species (F.R. 10/11/83). Populations of the chub have been significantly reduced by modifications of its aquatic habitat.

This fish occurs only in streams within the closed Guzman Basin, including sections of the Mimbres River of New Mexico and the Rio Casas Grandes, Rio Santa Maria, and Laguna Bustillos drainages of Mexico. Its habitat consists primarily of small to medium sized streams with some type of cover (such as undercut banks, fallen trees, and submerged shrubs) and pools 3 feet or more in depth. Chubs once were plentiful enough to serve as a food source for local Indians. The species was still relatively abundant in 1884, but has declined steadily since the turn of the century. Diversion of surface waters for irrigation, stream channelization, and construction of dams and levees without concern for the chub have degraded the fragile habitat to the detriment of native fishes. Excessive groundwater pumping has also caused some of the pools and stream habitat to disappear. The introduction of exotic predatory and competing fish species into the ecosystem may

also have been a factor in the decline. By 1938, the Chihuahua chub was reported to be extinct. It was rediscovered in 1975 in a small spring tributary of the Mimbres River, but has not regained its former abundance. Population levels from 1978-1983 ranged from only 10 to 80 individuals.

In 1979, the Service contracted a survey of the chub's status in the U.S. and Mexico. The survey biologists located the New Mexico population and found that, of 15 localities in Mexico where the species was once common or abundant, only 7 still held chub populations. Additional studies were conducted during 1981-1982 by the New Mexico Department of Game and Fish (NMDGF) in the Mimbres River. The distribution of the chub is limited to one section of a few miles along the Mimbres in which there is permanent water; most of the river is intermittent, due to use of the water for irrigation.

The Service originally proposed on December 5, 1980, to list the Chihuahua chub as an Endangered species and to designate its Critical Habitat (see the January 1981 BULLETIN). A total of seven written responses to the proposal were received. One was from the NMDGF, which opposed listing the fish as Endangered with Critical Habitat but indicated support for a listing as Threatened without Critical Habitat. The NMDGF based its recommendation on the presence of several Chihuahua chub populations in Mexico and the status of a captive population at the Dexter National Fish Hatchery, a Fish and Wildlife Service facility in New Mexico that is an important center for research and propagation of rare southwestern fishes. After considering these points, the Ser-

vice concurred with the NMDGF that, although the chub is vulnerable, it is not in imminent danger of extinction, and therefore the classification of Threatened is more appropriate.

A designation of Critical Habitat was not included in the listing rule because of the possibility of vandalism to the restricted species. Nevertheless, even without the widely misunderstood Critical Habitat section of the rule, the habitat of the Chihuahua chub will receive the protection authorized under Section 7 of the Endangered Species Act.

At a January 6, 1981, public meeting in Silver City, New Mexico, the Service answered questions and received additional statements on the proposed rule. Reaction to the proposal was mixed. The written and oral comments, along with the Service's responses, are summarized in the October 11, 1983, listing rule.

Effects of the Rule

With respect to the Chihuahua chub, all prohibitions under Section 9(a)(1) of the Endangered Species Act, as implemented by 50 CFR 17.31, will apply except for a special rule that will allow the fish to be taken in accordance with New Mexico State law. These prohibitions, in part, make it illegal for any person subject to U.S. jurisdiction to take the Chihuahua chub without a permit from the State or engage in interstate/international trafficking in this fish. Certain exceptions apply to agents of the Service and State conservation agencies. Under certain circumstances related to conservation of the species, permits may be issued through 50 CFR 17.32 for actions otherwise prohibited.

New Mexico law prohibits taking of the Chihuahua chub without a collecting permit. Such permits are issued by the State for approved scientific pur-

continued on page 4

BULLETIN Now Available by Subscription

The *Endangered Species Technical Bulletin* is now available by paid subscription to persons not eligible to receive this publication regularly without charge. In partnership with the World Wildlife Fund-U.S., the Wildland Management Center at the University of Michigan's School of Natural Resources will be reprinting and distributing the BULLETIN (at cost) each month, along with a clearly distinguishable insert summarizing their activities. For each subscription of 12 monthly issues, send \$12.00 by check or money order (payable to the University of Michigan) to Endangered Species Technical Bulletin, Wildland Management Center, School of Natural Resources, University of Michigan, Ann Arbor, Michigan 48109.

Due to budgetary constraints, the Fish and Wildlife Service has to limit its free distribution of the BULLETIN to Federal employees and official contacts of the Endangered Species Program. Those who have already been receiving the BULLETIN will continue to do so at no charge.



The Chihuahua chub's remnant habitat in the U.S. is vulnerable to stream diversion, channelization, and groundwater pumping.

Photo by James E. Johnson

Shrimp

continued from page 1

Wildlife Service on the species' status, distribution, and life history.

This intensive 2-year study of the Kentucky cave shrimp made it one of the world's best known cave animals. Under contract to the NPS, Dr. John R. Holsinger and Arthur T. Leiteuser of Old Dominion University (Norfolk, Virginia) searched 95 sites in 37 caves throughout the Flint-Mammoth Cave System and other nearby systems. They found that some cave faunas in the Mammoth Cave area have significantly declined over the past 10 years as a result of ground water pollution. With regard to the Kentucky cave shrimp specifically, only one possible population outside the Flint-Mammoth System was discovered. In July 1983, Leiteuser entered Blue Spring in Hart County, Kentucky, and sighted two crustaceans presumed to be Kentucky cave shrimp. The Service is withholding recognition of this population as belonging to the same species until individuals are collected and their taxonomic status determined. If this population is later identified as the same species of shrimp, it will receive protection as an Endangered species along with all other populations.

After completion of the study, another public hearing on the proposal to list the Kentucky cave shrimp and to designate its Critical Habitat was held at Mammoth Cave National Park. No scientific information was submitted to indicate that the species is not in danger of extinction. Summaries of the written and oral comments, and of the Service's responses, are included in the October 12, 1983, *Federal Register*. Among the comments supporting the proposal were statements submitted by the Kentucky Department of Fish and Wildlife Resources, Kentucky Nature Preserves Commission, National Speleological Society, Cave Research Foundation, and the National Parks and Conservation Association.

Effects of the Rule

As an Endangered species, the Kentucky cave shrimp will benefit from the conservation measures authorized under the Endangered Species Act of 1973, as amended. Taking, possessing, or engaging in interstate/international trafficking in this organism are among the prohibitions in 50 CFR 17.21. Certain exceptions apply for agents of the Service and State wildlife agencies. Permits for otherwise prohibited activities could be issued, under 50 CFR 17.22 and 17.23, for certain scientific, conservation, or economic hardship purposes.

Under Section 7 of the Act, Federal



Kentucky cave shrimp with ova

agencies will be required to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the Kentucky cave shrimp or adversely modify its Critical Habitat. The Critical Habitat designated in the October 12 rule is limited to a total of about one mile of the Roaring River passage in the Flint-Mammoth Cave System. At the time when the original listing proposal was published, the shrimp was known only from this area of the cave. Subsequently, Holsinger and Leiteuser discovered shrimp in other passages, including Mystic, Echo, Styx, and Colossal Rivers, Lake Lethe, and the Golden Triangle. Since there was no opportunity for public comment on inclusion of these areas in the October 12 Critical Habitat designation, as required by law, they could not be added. However, they may be included in any future proposals to revise the Critical Habitat. Even without this designation, all areas inhabited by the shrimp will receive Section 7 protection.

Chihuahua Chub

continued from page 3

poses. The state law specifically prohibits bait minnow seining in the Mimbres River where this species occurs.

The Chihuahua chub and its habitat will receive protection under Section 7 of the Act. All Federal agencies will be required to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species by directly affecting the fish or by adversely modifying its habitat. Federal agencies involved in actions such as modification of the habitat for flood control or irrigation would

be required to consult with the Fish and Wildlife Service. Often, reasonable and prudent project alternatives can allow the activity to proceed without jeopardy to the species' survival. In addition, actions of a purely private nature, such as fruit tree spraying or construction of push-up dams, would not be affected if there are no violations of Section 9(a)(1) of the Act.

Among other conservation measures authorized by the listing is the development of a recovery plan for the Chihuahua chub. Fish produced at the Dexter National Fish Hatchery could be released into rehabilitated reaches of the historic habitat to supplement wild populations of the Chihuahua chub as part of such a plan.

Photo by Lucia Weber

Texas Alligators Reclassified

The status of the American alligator (*Alligator mississippiensis*) in Texas has been reclassified under the Endangered Species Act from Endangered and Threatened in different regions of the State to the less restrictive statewide category of Threatened due to Similarity of Appearance (F.R. 10/12/83). This action constitutes formal recognition by the Service of the biological recovery of the alligator in Texas. The State may now institute a comprehensive management plan for the alligator, which could include a regulated harvest season.

Due to poaching and overhunting for its hide, the American alligator was listed in 1967 by the Federal Government as Endangered throughout its entire range. In 1969, the State of Texas closed its alligator hunting seasons. Subsequently, in response to strict Federal and State protection, American alligator numbers rebounded in many parts of the species' range, and it has been gradually reclassified in areas where it is most secure. In 1977, alligators in most coastal Texas counties were reclassified to Threatened, a category which authorized the control of nuisance animals. The October 12, 1983, reclassification of all American alligators in Texas to the category of Threatened due to Similarity of Appearance puts them in the same

status as those in Louisiana, where a limited harvest of American alligators is allowed under State management and in accordance with specific State and Federal regulations.

Recent estimates of the American alligator population in Texas have been based on aerial surveys, line-transects, and survey questionnaires dating from 1975-1981. Using a census technique developed for Louisiana's management program, the Texas Parks and Wildlife Department (TPWD) indicates that numbers of alligators on prime Texas habitat have doubled in the past 5 years. According to the TPWD, alligator nest densities are near the maximum for the habitat, and population growth may have reached optimum levels. On the basis of this information, the Service proposed on September 13, 1982, to reclassify all American alligators in Texas.

Effects of the Rule

The American alligator in Texas is reclassified statewide to Threatened due to Similarity of Appearance, the least restrictive category under the Endangered Species Act. Authority and responsibility for the management and protection of this animal now rests with the State of Texas under recently enacted State statutes. This gives Texas the options to expand its nuisance alligator control program and/or to allow the harvest of alligators in specified counties in accordance with State management proce-

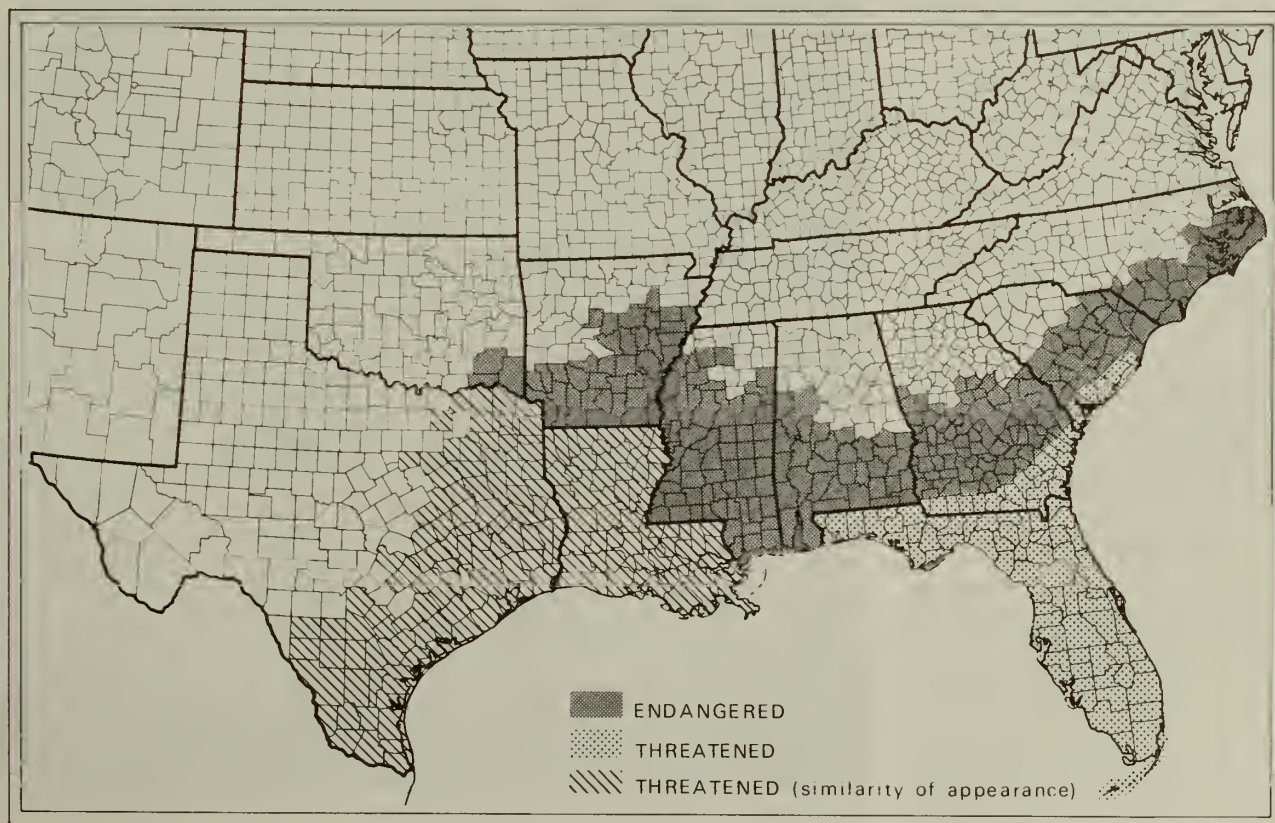
dures and Federal regulations [50 CFR 17.42(a)].

A degree of continued protection for the alligators under the new classification is authorized by Section 4(e) of the Act. It is necessary to regulate commercial activities in products derived from American alligators taken in Texas (as well as Louisiana) because these animals are similar in appearance to American alligators from less secure populations, as well as to other vulnerable crocodilian species that still need law enforcement protection. In accordance with the requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), foreign commerce in American alligator parts from Texas will not be allowed until such time as the State develops a tagging and marking program for harvested alligators that is consistent with Service regulations and CITES criteria.

The reclassification rule removes American alligators in Texas from the habitat conservation measures under Section 7 of the Act. Fortunately, much of the prime habitat is under State or Federal management (including a number of national wildlife refuges), and water storage activities are increasing habitat availability.

The status of the American alligator in other parts of its range is not affected by this rule (see map).

FEDERAL STATUS OF THE AMERICAN ALLIGATOR THROUGHOUT ITS HISTORICAL RANGE



San Benito Evening-Primrose Proposed as Endangered

The San Benito evening-primrose (*Camissonia benitensis*), a plant that exists only in a few scattered populations in San Benito County, California, has been proposed by the Service for listing as an Endangered species (F.R. 10/31/83). Many of the plants and much of their habitat are being destroyed by heavy off-road vehicle (ORV) use.

This species, a small annual plant in the evening-primrose family (Onagraceae), has bright yellow flowers. It grows on serpentine alluvial terraces along Clear Creek and San Carlos Creek at elevations of 760-1,340 meters. Even under favorable conditions, the San Benito evening-primrose has only a moderate reproductive potential, and it is not an aggressive species. Biologists estimate that fewer than 1,000 of the plants remain, all of them restricted to vulnerable sites.

Heavy recreational use within Clear Creek Canyon is the primary threat to the survival of the San Benito evening-primrose. ORV activity has degraded much of the habitat of the species throughout the Clear Creek area. Typically, the most attractive sites for ORV use and camping are also the most likely sites for the plant. ORV damage to a smaller population in the San Carlos Creek area is not known to be a significant problem at this time.

In addition to the impact on the plants, disturbance of the serpentine deposits upon which the plants grow could have serious health implications for people using the Clear Creek area. A report by W. C. Cooper, J. Murchio, W. Pependorf, and H. R. Wenk in the November 9, 1979, issue of the journal "Science" documented high concentrations of chrysotile asbestos, a known carcinogen, in dustfall found along the ORV trails. The airborne fibers collected during their study had characteristics that could make them hazardous to human health if inhaled over long periods of time.

The Service was petitioned in 1977 to list the San Benito evening-primrose by Ms. Alice Howard of the California Native Plant Society's Rare Plant Project Committee. Accompanying this petition was a detailed account of the species and its status by Dr. James R. Griffin of the Hastings Natural History Reservation, University of California. The plant subsequently was included in a December 15, 1980, notice of review on plants being considered for listing under the Endangered Species Act.

If the rule is adopted as proposed, the San Benito evening-primrose will receive the protection authorized for Endangered plants under the Endangered Species Act of 1973, as amended. All trade prohibitions in 50 CFR 17.61 would apply. These prohibitions, in part,

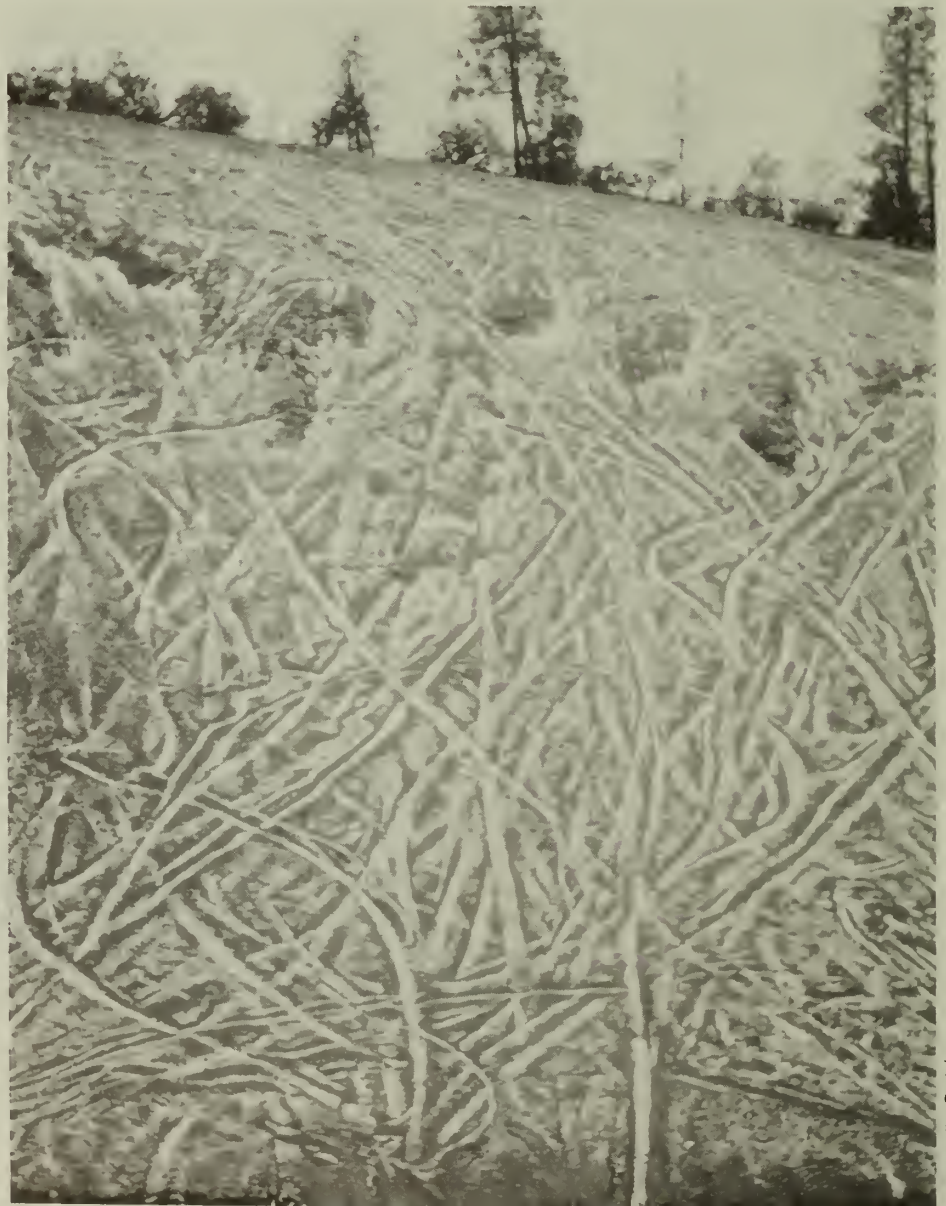
would make it illegal for any person subject to U.S. jurisdiction to import or export, ship in interstate/international commerce, or sell (or offer for sale) in interstate/international commerce any of these plants. Certain exceptions would apply to agents of the Service and State conservation agencies. Permits to carry out otherwise prohibited activities could be granted under 50 CFR 17.62 and 17.63 for certain scientific, conservation, or economic hardship cases.

Section 9(a)(2)(B) of the Act, as amended in 1982, prohibits the removal and reduction to possession of any Endangered plants from lands under Federal jurisdiction. This prohibition would apply to the San Benito evening-primrose since most of the plants are on public property administered by the Bureau of Land Management (BLM).

Permits for exceptions to this provision are available under Sections 10(a) and 4(d) of the Act, following the general approach of 50 CFR 17.72 until revised regulations are published.

The habitat of the San Benito evening-primrose would receive protection under Section 7 of the Act. Federal agencies, including the BLM, would be required to use their statutory authorities to assist in conservation efforts for the species, and to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species by directly affecting the plants or by adversely modifying the habitat. A formal designation of Critical Habitat was not proposed because publication of the

continued on page 7



Hail from a recent storm highlights ORV tracks in the Clear Creek area.

Photo by Jim Bartel

Carter's Panicgrass Listed as Endangered

Carter's panicgrass (*Panicum carteri*), an annual grass found only at one site in the Hawaiian Islands, has been listed by the Service as an Endangered plant (F.R. 10/12/83). Among the principal threats to the survival of this species are vandalism, inadvertent trampling of the plants, and habitat disturbance.

P. carteri is endemic to Mokoli'i, a picturesque 4-acre islet also known as Chinaman's Hat because of its conical shape, just off Kualoa Point, O'ahu. Such extreme endemism would be unusual in a continental species, but is common among Hawaiian plants, many of which are known only from small, isolated populations. This is, in fact, one of the main reasons that such a high proportion (about 40 percent) of native Hawaiian plants are extinct, Endangered, Threatened, or candidates for listing.

P. carteri fluctuates considerably in numbers from year to year, apparently in response to the amount of rainfall. It is one of several endemic Hawaiian species of the large cosmopolitan genus *Panicum* that are adapted to dry lowland habitats. The plants are evident only during and immediately after the winter rains, after which they die back, leaving only seeds for the next growing season. Since the first known collection of *P. carteri* in 1917, the highest number of individuals ever counted during a rainy season was slightly over 200, while in

some years observers have failed to find the plant at all. As late as 1975, it was thought to be extinct.

Although Mokoli'i is part of Kualoa Regional Park and has been designated as a wildlife sanctuary, it is difficult to control access to the island. It can be reached by wading and swimming during low tides, and by small boats at any time. As the park is developed, it is likely that more people will be drawn to the area and will reach Mokoli'i, further jeopardizing the plant. The entire *P. carteri* population ranges along a foot trail, and some trampling of the plants and deterioration of their fragile habitat can be anticipated. A single fire, either accidental or an act of vandalism, also could destroy the population. The unauthorized planting of coconut trees on the island several years ago may have already had a severe impact of the *P. carteri* habitat, inhibited its growth, and encouraged the establishment of aggressive exotic plants.

Panicum carteri was among 1,700 plant taxa proposed in 1976 by the Service, in response to a report prepared by the Smithsonian Institution, for listing as Endangered or Threatened. Because of procedural requirements in the 1978 Amendments to the Endangered Species Act, the listing proposal was withdrawn and subsequently repropounded on January 30, 1981. Comments received in response to the repropounded rule are

summarized in the October 12, 1983, *Federal Register*, along with the Service's replies.

One of those commenting on the proposal was the Governor of Hawai'i, who agreed that *P. carteri* is in need of protection. However, he considered listing unnecessary in light of conservation measures such as habitat access restrictions and potential transplantation of the species to other areas. Similar points were raised by the Mayor of Honolulu. In reply, the Service noted the difficulty in controlling access to Mokoli'i and the fact that no successful reproduction of transplanted *P. carteri* has occurred. The ultimate success of such a transplantation effort remains highly speculative, and the absence of *P. carteri* from areas adjacent to its current range suggests that long-term maintenance of populations elsewhere may not be feasible.

Under the Endangered classification, it is illegal for any person under U.S. jurisdiction to import, export, transport in interstate/international commerce, or sell (or offer for sale) this plant in interstate/international commerce. Certain exceptions apply to agents of the Service and State conservation agencies. Permits for otherwise prohibited activities are available under 50 CFR 17.62 for certain conservation, scientific, or economic hardship purposes. Although *P. carteri* and its habitat will receive protection from any Federal actions that are likely to jeopardize the species' existence, no such actions are anticipated.

Emergency Protection Reestablished for Caribou

A second emergency rule to protect the southern Selkirk Mountain herd of the woodland caribou (*Rangifer tarandus caribou*) as an Endangered species has been published (F.R. 10/25/83). This very small herd is the only population of caribou that still regularly occurs in the conterminous United States, and it is found only in parts of northern Washington, northern Idaho, and southern British Columbia, Canada. Recent censusing using radio-tracking and other methods indicates that the herd numbers about 30, slightly higher than in earlier counts, but it still is considered one of the most critically Endangered mammals in the U.S. The herd is jeopardized by such factors as poaching, habitat loss to timber harvesting and wildfires, collisions with motor vehicles, and genetic problems resulting from inbreeding.

Temporary protection under the Endangered Species Act was first given to the southern Selkirk Mountain herd on January 14, 1983, when it was listed for the first time as Endangered in an emergency rule (see the January 1983 BULLETIN). During the 240-day life of the emergency listing, a proposal to give permanent protection to the herd as an Endangered species was published (F.R. 6/22/83); however, final action was delayed because public notification requirements under the Act were not met, and the comment period had to be reopened until November 7, 1983. Since the first emergency listing rule expired September 12, 1983, the Service decided to publish a second in order to protect the caribou until the final listing is completed.

San Benito

continued from page 6

required maps could subject the plant to further danger from vandalism; nevertheless, its habitat would receive the protection authorized under Section 7.

The upper San Carlos Creek popula-

tion of the San Benito evening-primrose already is offered a degree of administrative protection because of its location within the San Benito Mountain Natural Area. Nonetheless, no physical barrier exists to keep ORVs from the site, and enforcement of an ORV closure is difficult. The BLM considers ORV activity a legitimate use of public lands in many other areas, including Clear Creek Canyon, where such activity is restricted at only a few small sites. Three of the five Clear Creek populations are adjacent to designated camping areas or "free play" ORV zones. Listing the plant as Endangered therefore would aid in the species' conservation through the interagency cooperation provisions of Section 7.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and should be received by the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232 by December 30, 1983. Requests for a public hearing are due by December 15.

Santa Barbara Song Sparrow Removed from Endangered List

In acknowledgement of its extinction, the Santa Barbara song sparrow (*Melospiza melodia graminea*) has been removed from the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 10/2/83). No individuals of this endemic subspecies have been sighted for more than 20 years.

This small bird was known only from Santa Barbara Island, which is part of the Channel Islands National Monument off the southern California coast. Since a 1959 fire, which devastated most of 640 acres of the island, no Santa Barbara song sparrows have been reported.

Many efforts to find surviving birds have failed. For the past decade, regular visits to the island have been made by qualified ornithologists and National Park Service naturalists (some of whom have lived on the island). Before the fire, the Santa Barbara song sparrow was a conspicuous part of the island's avifauna.

The Santa Barbara song sparrow was proposed for delisting in the August 9, 1982, *Federal Register*. In that notice, the Fish and Wildlife Service requested any information indicating that the sparrow still exists. Unfortunately, no such information is available and, based on

the recent field observations, the Service has concluded that the Santa Barbara song sparrow is extinct. Both the State of California and the National Park Service agree with this conclusion.

Effects of the Rule

This action merely acknowledges the species' extinction and officially removes it from the provisions of the Endangered Species Act of 1973, as amended. Since there were no specific conservation or management programs in effect, there will be no impact from the delisting on any agency or individuals.

Listing Proposal for Eastern Plant Withdrawn

A proposal to list the silverling (*Paronychia argyrocoma* var. *albimontana*) as Threatened has been withdrawn by the Service (F.R. 10/25/83). The proposed rule stated that this plant occurs in Maine, New Hampshire, and Massachusetts; however, the proposal has been withdrawn because new data indicate that the plant's name does not represent a valid, distinct biological entity. In addition, the New England populations of the silverling, although rare, are considered not to be in danger of extinction within the foreseeable future.

New England populations of the silverling have been documented from 14 sites in recent years—9 in New Hampshire, 4 in Maine, and one in Massachusetts. They were thought to comprise a distinct variety (var. *albimontana*) of *Paronychia argyrocoma*, and this varietal name was included in a 1975 petition on plants considered threatened, endangered, or extinct by the Smithsonian Institution. The variety subsequently was proposed by the Service on October 27, 1980, for treatment as a Threatened species under the Act.

Information received from the New York Botanical Garden in response to the proposed listing indicated a report of plants referred to as *Paronychia argyrocoma* var. *albimontana* occurring in parts of North Carolina, Tennessee, and Georgia. To resolve the taxonomic questions raised by the Service from this reported range extension, Dr. Andrew F. Robinson, a Service botanist, conducted field work on the species and an analysis of herbarium specimens. His conclusion, which will be documented

in a paper to be submitted for scientific publication, is that *Paronychia argyrocoma* var. *albimontana* is not taxonomically separable from other populations of the species. The reported morphological differences used to separate the species into varieties were found to be inconsistent because they varied too greatly within individual plants, between plants in a population, and among populations. No biological characteristics could be found that consistently separate the *Paronychia argyrocoma* populations in New England from those in the southern Appalachian Mountains, or that allow one to recognize var. *albimontana* as occurring in the South.

Threats to the silverling populations in New England do not appear as serious as once thought. Of the 14 known populations, 9 occur at relatively inaccessible sites on rock ledges, in crevices, and on mountain tops within the White Mountain National Forest. Trampling by hikers and rock-climbers does not seem to be causing significant damage to the plants, and collecting appears to be very rare and no more than a very minor threat. U.S. Forest Service management already gives some protection to the plant and its habitat.

The October 25, 1983, notice officially withdraws the proposed listing rule on *Paronychia argyrocoma* var. *albimontana* because it is now considered a synonym of *Paronychia argyrocoma*. This species over its entire range does not need protection under the Act. Section 3(16) of the Act precludes listing any plant populations that are not also distinct species, subspecies, or varieties. The Fish and Wildlife Service does recognize that the New England populations of the silverling are rare, although not threatened with extinction, and considers some precautionary conservation measures at the State level appropriate to avoid their decline to a more precarious status.

Ash Meadows

continued from page 1

rescences. Its primary habitat is in saltgrass meadows along streams and pools, but it is occasionally found in drier areas on alkali clay soils.

- *Ivesia eremica* (Ash Meadows ivesia) is a perennial with a tuft of leaves emerging from a woody root crown. It occurs only in saline seep areas of light-colored clay uplands.
- *Mentzelia leucophylla* (Ash Meadows blazing star) is a biennial or short-lived perennial with white stems that reach a height of 5 dm (about 20 inches), and its light yellow flowers occur in broad inflorescences. This plant grows on sandy or saline soils.
- *Astragalus phoenix* (Ash Meadows milk-vetch) is a low, matted perennial forming mounds up to 50 cm across. The flowers are pink to purple in color, and measure about 25 mm long. It is found on dry, saline clay flats, knolls, and slopes.
- *Enceliopsis nudicaulis* (Ash Meadows sunray) is a perennial that forms clumps 1-4 dm (about 4-16 inches) high, with floral heads borne singly on leafless flower stalks. The ray flowers have yellow corollas and the disks are 2-3.5 cm across. This plant grows in dry washes on saline soil.
- *Nitrophila mohavensis* (Amargosa niterwort) is a long lived, low growing (up to 8 cm high) plant with small bright green leaves and inconspicuous flowers. It is found only on salt encrusted alkali flats at the south end of Carson Slough near the Nevada border.
- *Ambrysia amargosus* (Ash Meadows naucorid) is a small, apparently flightless, aquatic insect reaching up to 6 mm in length. It is

reported only from the Point of Rocks Springs and their outflow streams.

Many other plant and animal species are endemic to Ash Meadows, among them four Endangered fishes: the Devils Hole pupfish (*Cyprinodon diabolis*), Warm Springs pupfish (*Cyprinodon nevadensis pectoralis*), Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*), and Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*). A fifth endemic fish, the Ash Meadows killfish (*Empetrichthys merriami*), is already extinct. Ash Meadows also has an extraordinarily diverse endemic freshwater mollusk fauna. Eight of the mullusks are now candidates for listing, and more will probably be added later.

Threats to the Ecosystem

Damage to the Ash Meadows habitat began when early homesteaders diverted spring outflows for irrigation, but efforts to farm the area failed because the salty clay soils were unsuitable for crops. In the late 1960s and early 1970s, attempts at agriculture were made again. Large tracts of land were plowed, and ground water pumps and diversion ditches were constructed to support a ranching operation. These actions destroyed many populations of plants and animals, as well as their desert wetland habitats, by altering the land surface and lowering the water table. A U.S. Supreme Court decision in 1976 gave protection to the water supply of Devil's Hole, but ground water pumping on other areas of Ash Meadows was not specifically precluded.

In 1977, the agricultural interests in Ash Meadows sold approximately 23 square miles of land to a real estate developer, Preferred Equities Corporation (PEC). The proposed development of Ash Meadows by PEC into a large residential, recreational, industrial, and agricultural community would require extensive land clearing, spring outflow modification, and ground water pumping. Altering surface drainage patterns and mining the aquifer would reduce or eliminate surface water, lower the water table, and interfere with ground water recharge, resulting in the destruction of down-gradient wetlands. All of the listed and proposed species from Ash Meadows are directly dependent upon these sources of water for their survival.

PEC activities in Ash Meadows during recent years include road construction and altering spring hole and outflow channel morphometry at six sites. Decreases in riparian habitat have already reduced numbers of the spring-loving centaury. Channelization of the gravel-bottom outflow from Point of Rocks Springs has eliminated the Ash Meadows naucorid from its preferred



Nitrophila mohavensis

Photo by D. W. Sada



Astragalus phoenix

Photo by Joseph Dowhan

habitat, and this insect now only occurs in restricted numbers.

Several other factors have been indicated in the decline of the Ash Meadows species. The spring-loving centauray, Ash Meadows gumplant, and Ash Meadows ivesia are grazed by cattle and feral horses. One of these, the gumplant, has declined 90 percent within a fenced area where cattle and horses graze near Ash Meadows Rancho. In addition, many plant populations have been reduced by off-road vehicle traffic.

Effects of the Rule if Approved

If the rule is approved as proposed, all seven plants and the insect will receive the full protection authorized under the Endangered Species Act of 1973, as amended. With respect to the Ash Meadows naucorid, Section 9 of the Act, as implemented by Title 50, Code of Federal Regulations, Part 17.21, would make it illegal for any person subject to U.S. jurisdiction to take, import or export, ship in interstate commerce, or sell (or offer for sale) this insect in interstate/international commerce. It would also be illegal to possess, sell, deliver, carry, transport, or ship any individual of this species that was illegally taken. Certain exceptions would apply to agents of the Service and State conservation agencies. Permits to carry out otherwise prohibited activities could be granted under 50 CFR 17.22 and 17.23 for certain conservation, scientific, or economic hardship purposes.

With respect to the seven species of plants included in the proposed rule, all trade prohibitions of Section 9(a)(2) of the Act, as implemented by 50 CFR 17.61, would apply. These prohibitions, in part, would make it illegal for any person subject to U.S. jurisdiction to import or export, ship in interstate/international commerce, or sell (or offer for sale) in interstate/international commerce any of these plants. Again, certain exceptions would apply and permits could be granted under 50 CFR 17.62.

Section 9(a)(2)(B) of the Act, as amended in 1982, makes it unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction. (The Bureau of Land Management has jurisdiction over nearly half of the total acreage that would be affected by this rule.) Permits for exceptions to these prohibitions would be available through Sections 10(a) and 4(d) of the Act, following the general approach of 50 CFR 17.72 until revised regulations are published.

The listing rule, if approved, would subject PEC to law enforcement action or to civil injunction through Section 9 of the Act if its development activities harm the Ash Meadows naucorid. If any Endangered plants on Federal lands in the area are harmed by such PEC

actions as land clearing or ground water pumping, Section 9 would also be applicable. Protection has already been given to the springs inhabited by the four listed fishes.

Critical Habitat designations for the plants and insect were included in the proposed rule. The areas that would be affected comprise the entire known present range of each species, totalling less than 11 square miles. Based on the best available data, the Service believes that a smaller area for any of these species could result in their extinction.

Under Section 7 of the Act, Federal agencies would be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the eight species or adversely modify their Critical Habitats. Current BLM activities are consistent with the conservation of these species and therefore will not be affected. An economic analysis of the Critical Habitat section of the proposed rule will be completed prior to publication of a final rule.

Public Comment Requested

Comments on the proposed rule are invited from all interested agencies, organizations, and individuals, and are due to the Regional Director, U.S. Fish and Wildlife Service, Suite 1692, Lloyd 500 Building, 500 N.E. Multnomah Street, Portland, Oregon 97232 by December 12, 1983.

Regional Briefs

continued from page 2

lanei) determined that there had been a tremendous amount of insect damage to the Idaho populations of this plant this year.

Another Conservation Agreement, this one between the Service and the U.S. Department of Energy (DOE), Nevada Operations Office, was just completed for a Category 2 listing candidate, the Beatley milk-vetch (*Astragalus beatleyae*). This plant occurs only on Pahuti Mesa and Trail Ridge, located in the northwestern portion of the DOE Nevada Test Site. The DOE will prepare a species management plan outlining conservation measures for *Astragalus beatleyae*.

Region 2—The Service has funded the third year of the ocelot (*Felis pardalis*) study in south Texas by Texas A&I University, Caesar Kleberg Wildlife Research Institute. The purpose of the study is to determine the status, range, habitat requirements, food habits, and breeding biology of the species, as well

as to propose beneficial management practices. Due to land use changes, primarily brush clearing, these cats are now only occasionally sighted in isolated pockets of dense brush in south Texas. Thus far, the study has resulted in the capture and radio-collaring of 11 ocelots for tracking.

Under a Section 6 Cooperative Agreement, New Mexico is negotiating with the Town of Socorro to obtain land and water rights for the Socorro isopod (*Thermosphaeroma thermophilus*). This crustacean's recovery plan calls for construction of additional habitats within the historic range of the species. Also under Section 6, New Mexico is working with The Nature Conservancy to acquire property on the Mimbres River as habitat for the newly listed Chihuahuan chub (*Gila nigrescens*). For more on the listing, see the story in this issue of the BULLETIN.

Bosque del Apache NWR reported over 1,300 dead waterfowl in the winter habitat of the Grays Lake/Bosque del Apache whooping crane (*Grus americana*) experimental flock. Within one day's discovery of the dead birds, Dr. Robert Lange, Jr., of the Service's National Wildlife Health Laboratory in Madison, Wisconsin, was at the site to help evaluate the problem. The reason for these deaths was identified as botulism. The outbreak area was quickly identified and measures were taken to eliminate the problem. Meanwhile, the two whooping cranes (recent arrivals) on the refuge were monitored to make sure they stayed away from the infected areas.

During the 1983 peregrine falcon (*Falco peregrinus*) nesting season, the National Park Service and the Fish and Wildlife Service cooperatively determined the occupancy and productivity at seven eyries in west Texas. Although five of the seven eyries were occupied by adult pairs, only a single chick was successfully fledged. These results were disappointing, especially since seven young peregrines fledged from four of these eyries in 1982.

Region 5—Three injured peregrine falcons have been treated at the new Tufts University Raptor Rehabilitation Center in North Grafton, Massachusetts. The center is headed by Dr. Charles Sedgewick, Associate Professor of Wildlife and Zoo Medicine.

Regional endangered species specialist Paul Nickerson attended a meeting at the University of Maine, Orono, on October 27 to participate in the identification and ranking of sites for proposed peregrine falcon releases in 1984. This

may lead to Maine's first peregrine release.

Region 6—A Summary Report for the Upper Platte River Study in Colorado, Nebraska, and Wyoming was published in September 1983. This report completes a study by the Bureau of Reclamation, Fish and Wildlife Service, and Geological Survey. It summarized individual investigations by the three agencies, and describes the available resource base and options for further utilization of Platte River waters.

The summary report centers on ecological studies involving water use, management, flow conditions, and channel morphology. Although several questions remain unanswered regarding the development, use, and conservation of water and related resources in the Upper Platte River Basin, this technical study does provide information on the habitat requirements of migratory birds and other wildlife, the relationship between water supply and habitat availability, and the need for habitat preservation activities as well as water for agricultural, municipal, and industrial interests. Further information on this summary

report may be obtained by contacting: Bureau of Reclamation, Attn: LM-720, P.O. Box 25247, Denver Federal Center, Denver, Colorado 80225.

Whooping crane (*Grus americana*) migrations continue to be monitored each spring and fall as part of the Cooperative Whooping Crane Tracking Project. The Service's Pierre, South Dakota, Field Office gathers volunteer reports of sightings from Texas to the Northwest Territories of Canada. The office also serves as northern coordinator during the radio-tracking project, which is now proceeding. During this fall's migration, one of two radioed yearling whooping cranes was successfully tracked all the way to the wintering grounds at Aransas National Wildlife Refuge in Texas. The whooper left Fort Smith in the Northwest Territories on September 24 and arrived at Aransas on October 25, with stops recorded at North Battleford, Saskatchewan; Moose Jaw, Saskatchewan; Moberg, South Dakota; Wilson Reservoir, Kansas; Salt Plains National Wildlife Refuge, Oklahoma; and Denton, Texas.

Region 7—Two years ago, when the Service terminated the captive-rearing of Aleutian Canada geese (*Branta canadensis leucopareia*), about 16 breeding pairs unsuitable for release to the wild were loaned to 10 public zoos and private waterfowl breeders. Since then, these volunteer cooperators have successfully raised about 25 goslings. Among those most adept at raising Aleutian geese thus far are the Kortright Waterfowl Park in Ontario, Canada; Mrs. Paul Compaa of Jamestown, North Dakota; and the Philadelphia Zoo.

The Alaska Zoo in Anchorage is the most recent institution to obtain Aleutian geese. Many Alaskan residents now have an opportunity to observe this Endangered bird that otherwise occurs in regions too remote to be seen. Other cooperators are providing a similar service to the recovery effort by maintaining a reserve gene pool while displaying the geese and educating the public.

Plans are underway for the largest breeding loan to date - 18 birds - for two zoos in Japan in an attempt to reestablish a population there.

CITES News—October 1983

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate

Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these

species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

U.S. Adopts CITES Amendments

The amendments to CITES Appendices I and II that were adopted by the 1983 Conference of Party Nations in Botswana have been accepted by the United States without reservations and incorporated into the Service's regulations implementing CITES (F.R. 10/4/83). Because the adopted amendments are quite lengthy, they are not reprinted here. Please consult the *Federal Register* (Vol. 48, No. 193, pp. 45259-45263) for a complete listing.

Among the affected North American species, special recognition was given to the threat posed by international trade to a large number of native plants, particularly cacti and succulents. A total of 27 species and one entire genus of U.S. and Mexican cacti were transferred to the more restrictive Appendix I in an

effort to tighten trade controls. Many of these plants are also listed under the Endangered Species Act.

Final Rule on Ginseng Export

A final rule on the export of American ginseng (*Panax quinquefolius*), a plant that is on Appendix II to CITES, has been published by the Service (F.R. 10/7/83). It announces the States that have satisfied the Service's requirements on export of ginseng harvested in the 1983 season. Such determinations are made on a State-by-State basis, and can be made for more than one year.

The Service approves export of ginseng lawfully taken during the 1982-84 seasons in the following States, on the grounds that both Scientific Authority and Management Authority criteria have

been met: Arkansas, Georgia, Iowa, Kentucky, Maryland, Minnesota, Missouri, North Carolina, Ohio, Vermont (artificially propagated only), Virginia, West Virginia, and Wisconsin (wild only). The Service approves export of Illinois ginseng lawfully taken during the 1982 season only. The Service approves export of ginseng lawfully taken during the 1982 and 1983 seasons only in the following States: Indiana, Tennessee, and Wisconsin (artificially propagated only).

The Service does not grant general approval for exports of American ginseng taken from any other State during the 1982-84 harvest seasons.

The proposed rule on export of 1983 ginseng was published in the September 9, 1983, *Federal Register* (see the October 1983 BULLETIN). For those States that have not yet satisfied the Service's requirement, the comment period on the proposal will remain open until December 31, 1983.

New Publications

Endangered and Threatened Plants of Ohio, a 92-page bulletin published by the Ohio Biological Survey, presents "a comprehensive annotated list of those native Ohio plants in danger of being lost from the State flora." Separate lists are presented for the lichens, bryophytes, pteridophytes, gymnosperms, monocotyledons, and dicotyledons. The publication covers 821 taxa, or about one-third of Ohio's native plant species. It can be purchased for \$12.00 postpaid from the Ohio Biological Survey, 484 West 12th Street, Columbus, Ohio 43210. (Ohio residents add 5 percent sales tax).

A revised and expanded second edition of *The Evolution of National Wildlife Law*, by Michael J. Bean, is now available. This 432-page book covers the background and development of the major Federal statutes, regulations, and treaties pertaining to wildlife. It updates his original 1977 edition published by the Council of Environmental Quality. Copies of the 1982 edition may be ordered from: Sales, Praeger Press, 521 Fifth Avenue, New York, New York 10017. The price is \$12.95 paperbound, \$39.95 clothbound.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	283	19
Birds	51	14	144	3	0	0	212	40
Reptiles	8	6	55	8	4	12	98	6
Amphibians	5	0	8	3	0	0	16	3
Fishes	29	2	11	12	0	0	56	23
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	9
TOTAL	199	44	444	48	7	36	785	113**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of species currently proposed for listing: 22 animals
27 plants

Number of Critical Habitats determined: 55

Number of Recovery Plans approved: 102

Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

October 31, 1983

Back Issues of BULLETIN Available

Back issues of the *Endangered Species Technical Bulletin* are available from the Fish and Wildlife Reference Service in Denver, Colorado. This service is an agency of the Denver Public Library and is funded by the U.S. Fish and Wildlife Service, Division of Federal Aid. Available "hard copy" issues will be sent free of charge upon request for as

long as the supply lasts. A set of back issues (July 1976-June 1982) is available on microfiche for \$3.00. For those who already have the earlier microfiche compilation (July 1976-November/December 1980), a supplement (through June 1982) is available for \$1.00. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy to Fish and Wildlife Reference Service, Unit J, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

November 1983

Vol. VIII No. 11

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Assessment of Vulnerable Native Plants Updated

by Bruce MacBryde
Office of Endangered Species

The Service has published a supplementary notice (F.R. 11/28/83) revising the information on about half of the taxa in its 1980 assessment of native ferns, conifers, and flowering plants that are, or may be, vulnerable to extinction, as well as those thought to have gone extinct. These changes are primarily additions and deletions of taxa from active consideration, changes in category for candidate taxa, and additions and deletions in their State historical distributions. This first supplement to the comprehensive notice of review published in the December 15, 1980, *Federal Register*, takes into account field work and taxonomic research of botanists and conservationists during the past 3 years, insofar as the data can be documented in Service files. Currently, the Service recognizes 2,560 native vascular plant taxa (species, subspecies, and taxonomic varieties) as candidates for listing as Endangered or Threatened species, with Hawai'i and California each having well over 600 of the candidates. The Service has so far evaluated 1,319 taxa that it has decided do not qualify as candidates.

Background

Section 12 of the Endangered Species Act of 1973 directed the Smithsonian Institution to prepare an initial assessment of vulnerable plants within one year, and a report was presented to Congress early in 1975. In early 1978, the Smithsonian Institution and the World Wildlife Fund published a revision of the report as a book. Taxa in these two documents have been accepted by the Service *continued on page 6*



The Maui silversword (Argyroxiphium sandwicense), or hinahina, is found only on the high, arid cinder slopes of a volcano on the island of Maui. Like many other native plants in the Hawaiian Islands, this species has declined primarily because of grazing by feral goats. It is one of the 992 taxa considered by the Service as Category 1 candidates for listing.

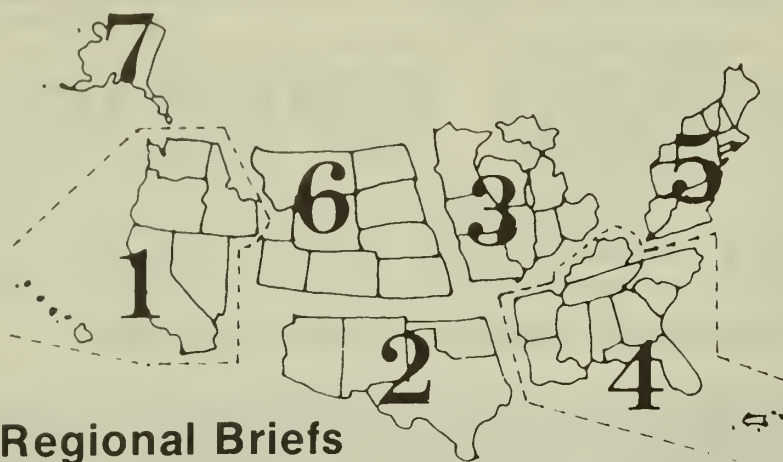
Nine Species in the Mariana Islands Proposed for Listing as Endangered

Seven birds and two mammals native to the Mariana Islands, an island group in the Western Pacific, have been proposed by the Service for listing as Endangered species (F.R. 11/29/83). Among the factors suspected in their decline are disease, predation by an introduced snake, poaching, habitat loss, and predation by other introduced (exotic) animals. A brief account on

each species follows:

- Guam broadbill (*Myiagra freycineti*), or *chuguanguang* in Chamorro, the language of the Mariana Islands. This small flycatcher is endemic to Guam, the southernmost island of the Mariana group. Although once relatively common in forests throughout the island, it

continued on page 8



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of November:

Region 1—On October 8, 1983, a 2½ year-old male woodland caribou (*Rangifer tarandus caribou*) of the southern Selkirk Mountain herd, which has been afforded emergency protection under the Endangered Species Act, was killed

at Waldie Lake, British Columbia, Canada. It was shot approximately 3 to 4 miles across the United States border, just north of the Metline Falls border crossing. The caribou had been tagged with a radio collar by Idaho Department of Fish and Game biologists in May 1983, and was one of the research animals they have been working with.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

There are only about 25 caribou remain-
ing in the herd.

A concentrated effort by the British Columbia Conservation Officers Service led to the filing of criminal charges concerning the illegal taking and possession of this animal. On October 21, 1983, a man from Ymir, B.C., was charged with the responsibility for shooting the animal, and a full confession was obtained. He was ultimately charged with shooting, illegal possession, and taking without a tag, three separate counts under the B.C. Wildlife Act. Charged with one count of possession was a man from Trail, B.C.

The Oregon Nature Conservancy recently acquired a 10-year lease with right of first refusal on Borax Lake, which is located in the Alvord Desert of southeastern Oregon. Borax Lake, the largest warm-water lake in Oregon, is the only habitat for the Endangered Borax Lake chub (*Gila boraxobius*). The Conservancy has repaired irrigation ditches in the area that had drawn off water necessary for the chub and a variety of nesting shorebirds. The management lease allows the Conservancy to control waterflow from Borax Lake.

Region 2—As a result of a year-long planning effort, 10 Sonoran pronghorn (*Antilocapra americana sonoriensis*) were captured and radio-collared in southwest Arizona during October 28-30, 1983. This project is being conducted by the Arizona Game and Fish Department in cooperation with the U.S. Fish and Wildlife Service, the U.S. Air Force, and Shikar Safari. The captures were accomplished by use of a "net gun" fired from a pursuing helicopter. Pursuits of individual animals were limited to 10 minutes and handling times to 5 minutes. No sedatives were used, and injuries and fatalities commonly associated with pronghorn captures were not encountered.

The habits of the Sonoran pronghorn are essentially unknown, and this project marks the first time that this subspecies has been captured for scientific study. It is hoped that the project will result in a better understanding of how the animals utilize their Sonoran Desert habitat, and thereby lead to effective management of the subspecies. Two weeks of tracking data indicate that all 10 animals are doing well and staying relatively close to their point of capture.

Technical drafts of recovery plans for six plants (*Callirhoe scabriuscula*, *Hedeoma apiculatum*, *Hedeoma todensei*, *Coryphantha minima*, *Spiranthes parksii*, and *Echinocereus viridiflorus* var. *davisii*), along with three agency

continued on page 5

San Francisco Peaks Groundsel Listed as Threatened

A dwarf alpine plant, the San Francisco Peaks groundsel (*Senecio franciscanus*), has been listed by the Service as Threatened (F.R. 11/22/83). This species occurs only within a 2.6 square km area in the mountains north of Flagstaff, Arizona. It is jeopardized primarily by trampling from off-trail hiking.

Senecio franciscanus grows only 3.2 to 10.2 cm high, with deeply lobed leaves and small yellow flowers. The one known population is found on the loose cinder talus slopes between Humphreys and Agassiz Peaks, part of the San Francisco peaks region of Coconino National Forest. Over time, a number of parallel trails have been worn by hikers throughout portions of the *Senecio franciscanus* habitat, seriously threatening the alpine vegetation by trampling and by disturbance of the unstable talus. A small part of the habitat was destroyed by construction of a chair-lift that services a nearby ski concession, and a proposed expansion of the ski area could have an indirect impact on the remaining habitat by facilitating access for an increasing number of summer hikers to the sensitive area. However, the operation of the ski area as it now exists will not be affected by the listing rule.

A proposal to list *Senecio franciscanus* as Threatened and to designate its Critical Habitat was published in the November 22, 1982 *Federal Register* (see December 1982 BULLETIN). In response to public notices, six comments on the proposal were received. The U.S. Forest Service (USFS), which manages the area on which the plant is found, endorsed the listing, and suggested changes in the Critical Habitat boundaries to more accurately reflect the species' biological needs. Both the Museum of Northern Arizona and the Arizona Native Plant Society also supported the proposal, as did the others who responded.

As a Threatened species, *Senecio franciscanus* will be protected against any proposed activities funded, authorized, or carried out by a Federal agency that are likely to jeopardize the continued existence of the species or adversely modify its Critical Habitat. The area designated as Critical Habitat includes the summits of Agassiz and Humphreys Peaks, along with the upper surrounding slopes and alpine area, which comprise the entire known range of *Senecio franciscanus*. Conservation of the plant and its Critical Habitat by the USFS will require only minimal expenditures. Management might include consolidating some of the multiple trails, developing new trails away from the

most vulnerable plant populations, or posting signs against hiking off of the designated trails.

The conservation regulations in 50 CFR 17.71 and 17.72, which include restrictions on interstate/international trafficking, also will apply. Since *Senecio franciscanus* occurs only on federally managed land, removal of this plant and reduction to possession without a permit will be prohibited once regulations implementing Section 4(d) of the Endangered Species Act of 1973, as amended, are completed.

Two Fishes Proposed for Listing

Two fish species were proposed during November 1983 for addition to the U.S. List of Endangered and Threatened Wildlife. The Big Spring spinedace (*Lepidomeda mollispinis pratensis*) was proposed for listing as Threatened (F.R. 11/30/83), and the smoky madtom (*Noturus baileyi*) as Endangered (F.R. 11/21/83).

Big Spring Spinedace

The Big Spring spinedace is a small fish (2 to 3 inches in total length), bright silver in color, with two relatively weak spines in the dorsal fin. Its ancestors became isolated in remote pockets of spring-fed meadows as the climate of southern Nevada became drier more than 10,000 years ago. The first known specimens were collected in the 1930s from a marshy area adjacent to Big Spring near Panaca, Nevada. Subse-

quently, diversion of spring water for agriculture, along with the introduction of the exotic mosquitofish (*Gambusia affinis*), led to a decline in the population. By 1960, when the Big Spring spinedace was described as a subspecies, it had been extirpated from its type locality and was believed to be extinct.

In 1978, however, Nevada Department of Wildlife biologists discovered a few individuals of this "extinct" subspecies in Condor Canyon, just northeast of Panaca. Currently, a population of the fish inhabits approximately 4 miles of a small, perennially flowing stream. This habitat, unfortunately, is subject to a number of threats. The stream, which is only 3 feet wide in most places, could easily be disrupted by a reduction or alteration of the water flow from such actions as channelization or overgrazing. If mosquitofish or other exotic species become established in the stream, they could compete with or prey upon the Big Spring spinedace, as well as introduce new parasites or diseases into the waters. Because the remaining habitat is so restricted, it is vulnerable also to a large flood or prolonged drought.

If the listing rule is approved, the Big Spring spinedace will be given protection under the Endangered Species Act as a Threatened species, a status that would generally prohibit taking or interstate/international trafficking. In addition, Federal agencies would be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the fish or adversely affect its Critical Habitat.

The area proposed as Critical Habitat is comprised of the 4 miles of stream currently inhabited by the Big Spring



A small, remote, spring-fed stream flowing through Condor Canyon in southern Nevada is the only remaining habitat for the Big Spring spinedace. The Nature Conservancy has purchased some of the habitat at the head of Condor Canyon that harbors not only the spinedace but two other endemic fishes.

Photo by D. W. Sada

spinedace, of which 3¼ miles are on lands administered by the Bureau of Land Management. Included in the designated Critical Habitat would be a buffer of 50 feet on either side of the stream to help maintain water quality and the stream channel. Without it, excessive cattle grazing along the stream could remove riparian vegetation and increase the silt load, leading to changes in water temperature, dissolved oxygen levels, and stream depth.

Comments on the proposal are due to the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232 by January 30, 1984.

Smoky Madtom

The smoky madtom is a small catfish, rarely exceeding 3 inches in total length. Although it is not well known, this fish is thought to be nocturnal and to feed on aquatic insects. During most of the year, the smoky madtom is found near riffle areas in water less than 20 inches deep. The species is known from only 6½ miles of Citico Creek, a tributary of the Little Tennessee River in Monroe County, southeastern Tennessee.

The smoky madtom was discovered in 1957 in Abrams Creek, a Little Tennessee River tributary in the Great Smoky Mountains National Park, by a Fish and Wildlife Service crew that was treating the creek with a fish toxicant. (This was a routine procedure at the time: removing "unwanted" fish in order to enhance the chances of establishing a successful trout fishery in a reservoir located downstream on the Little Tennessee River.) Although the smoky madtom was believed to have become extinct at that time, it was rediscovered in September 1980 by a Service survey crew sampling Citico Creek. A Service-funded study of the species was completed several months later. The survey involved extensive sampling at 44 sites in Tennessee and North Carolina, but the madtom was not found outside Citico Creek. Because of its limited distribution, the smoky madtom could be rendered extinct by a single catastrophic event. Its habitat also could be degraded by logging activities, road and bridge construction, mineral exploration, and other disturbances within the watershed if these activities are not carefully designed and carried out with the survival of the species in mind.

In response to a June 22, 1982, notice that the Service was reviewing the status of the smoky madtom, a number of State and Federal agencies expressed concern for the species. The Tennessee Wildlife Resources Agency recommended listing the fish as Endangered with Critical Habitat, and noted that extreme care is needed to ensure that no

habitat deterioration takes place. Concern for the well-being of the entire aquatic ecosystem was expressed by the Tennessee Department of Public Health, which pointed out that the watershed contains formations of anakeesta shale. This type of shale has a high (10 percent) sulfide content and forms sulfuric acid upon contact with water. If the anakeesta is exposed, acid leaching from the disturbed rock could increase the downstream concentration of sulfates, heavy metals, and acidity, which are toxic to many aquatic organisms. Just such an event occurred in the 1970s when anakeesta exposed during construction of the Tellico-Robbinsville Highway led to the contamination of Grassy Branch, a tributary of South Fork Citico Creek. A subsequent survey of Grassy Branch revealed no fish life. A similar accident on Citico Creek would be an even greater loss since the 38 species of fishes found in its waters make it the most diverse ichthyofauna in the entire Little Tennessee River drainage.

Most of the 6½ miles of Citico Creek inhabited by the smoky madtom flow through the Cherokee National Forest, and the U.S. Forest Service has no pro-

posed activities that would affect the water quality. Neither the U.S. Army Corps of Engineers, which supports the proposed listing, nor the Tennessee Valley Authority plan any projects in the area.

Although none of the habitat currently occupied by the smoky madtom is under jurisdiction of the National Park Service (NPS), that agency also has endorsed the listing proposal. The NPS has shown considerable interest in reestablishing the fish into parts of its historical range in Abrams Creek, which is within the Great Smoky Mountains National Park.

If the proposed rule is approved, the smoky madtom will be listed as an Endangered species and its 6½ mile range in Citico Creek will be designated as Critical Habitat. Accordingly, this fish will receive the protection authorized under the Endangered Species Act, including the prohibitions on taking, trafficking, and Federal involvement in degradation of Critical Habitat.

Comments on the proposed rule are due to the Field Supervisor, Asheville Endangered Species Field Station, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 by January 20, 1984.

Amendments Proposed for Exemption Regulations

Changes in the procedures governing applications for and consideration of Endangered Species Act exemptions have been proposed (F.R. 11/16/83). These changes are intended to implement the 1982 Endangered Species Act Amendments, which considerably streamlined the exemption procedures and reduced the time needed to process applications.

Under Section 7(a)(2) of the Act, Federal agencies are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of Endangered or Threatened species or adversely modify their Critical Habitats. Applications for exemptions from this requirement may be made by a Federal agency, the Governor of the State in which such a proposed action would occur, or a person whose permit or license application has been denied primarily because of Section 7(a)(2) considerations. An application would be directed to the Secretary of the Interior (or of Commerce, where

appropriate), who would evaluate it to see if certain criteria are met. If they are, the Secretary would prepare a report to the Endangered Species Committee, which then would decide if the exemption should be granted. The committee is composed of the Secretaries of the Interior, Agriculture, and the Army, the Administrators of the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, the Chairman of the President's Council of Economic Advisors, and a person appointed from each affected State. An exemption requires an affirmative vote of five or more committee members.

The proposed amendments to the regulations implementing the exemption process in 50 CFR 450-453 are described in the *Federal Register* notice. Comments on the proposal are due January 3, 1984, to the Chairman, Endangered Species Committee, c/o Office of Policy Analysis, Department of the Interior, Washington, D.C. 20240.

Fresno Kangaroo Rat Proposed as Endangered

The Fresno kangaroo rat (*Dipodomys nitratoides exilis*), a small, hopping mammal found only in a small part of the San Joaquin Valley in central California, has been proposed for listing as Endangered (F.R. 11/21/83). Extensive habitat loss has drastically reduced its range and numbers, and its remnant habitat is in jeopardy.

Kangaroo rats depend for their existence on natural soil and vegetation conditions, and the requirements of the Fresno kangaroo rat seem even more restrictive than those of its relatives. It needs a land surface with hummocks as sites for its extensive, but shallow, burrow systems, and a substrate of compactness suitable for burrow construction. Vegetation is necessary for food and for cover in order to escape predators. These habitat characteristics are eliminated upon conversion of land to crop production.

Shortly after its discovery in 1891, the Fresno kangaroo rat became rare in response to agricultural development of its habitat. Unlike some other rodents, it is not known to use areas that have been cultivated or irrigated. Historically, the range of the Fresno kangaroo rat probably covered about 250,000 acres of native alkali sink/open grassland habitat within western Fresno County. Currently, however, out of its once vast range, only about 6,417 acres of potentially suitable habitat remain, and field studies in 1981 found only about 857 acres actually occupied by the animal. Nearly all of the remaining habitat has been damaged by land clearing for crop production and by heavy livestock grazing. Some of this land will probably be fully converted to agricultural use within the near future, and all of it may deteriorate beyond value to the Fresno kangaroo rat unless conservation steps are taken. Although this mammal is listed by the State of California as endangered, the classification does not prevent habitat loss.

If the proposed rule is approved as published, the Fresno kangaroo rat will be listed by the Federal Government as an Endangered species, and will benefit from the conservation measures authorized under the Endangered Species Act. The implementing regulations in 50 CFR 17.21 set forth the measures that would apply, which include prohibitions on taking, possessing, or interstate/international trafficking in the animal without a permit. In addition, under Section 7 of the Act, Federal agencies would be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the Fresno kangaroo rat or

adversely modify its Critical Habitat. Actions of a purely private nature would not be restricted unless the animals themselves are affected.

The proposed Critical Habitat is comprised of the 857 acres currently occupied by the Fresno kangaroo rat. Of this land, about 565 acres will compose the State of California's Alkali Sink Ecological Reserve, about 20 acres are State-owned as part of the Mendota Wildlife Management Area, and the remainder is privately owned. In the event that individuals of the Fresno kangaroo rat are discovered outside its Critical Habitat, these animals also would be protected.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and are due to the Regional Director, Region 1, by January 20, 1984. (See page 2 of the BULLETIN for the address).

Regional Briefs

continued from page 2

review drafts (*Pediocactus peeblesianus* var. *peeblesianus*, *Eriogonum gypsophilum*, and *Sclerocactus mesae-verdae*), were sent to individuals and agencies for their comments regarding biological accuracy and the recovery plan tasks.

As of November 28, there were 73 whooping cranes (*Grus americana*) at Aransas National Wildlife Refuge, Texas, including six young-of-the-year. Nine whoopers were at Bosque del Apache NWR, New Mexico, with the remaining 21 somewhere between Bosque and Monte Vista NWR, Colorado. The late November storms likely pushed the remaining whoopers in the experimental flock into New Mexico.

Region 5—A Limited Authority Endangered Plant Agreement was signed in November with the State of New York. The agreement gives State conservation personnel the authority to work with the plants included in the document.

An Eastern Peregrine Falcon Recovery Team meeting was held in Williamsburg, Virginia, to discuss peregrine (*Falco peregrinus*) reintroduction plans for 1984. The major topics were 1) an expansion of reintroduction efforts into Maine and 2) clutch manipulation of the pairs that nested in Region 5 during 1983 in order to stimulate production of more eggs.

Region 5 Endangered Species Specialist Paul Nickerson attended a session at the Southeastern Association of Game and Fish Agencies' annual conference to discuss bald eagle (*Haliaeetus leucocephalus*) translocations.

Region 6—It has been 2 years since the rediscovery of the black-footed ferret (*Mustela nigripes*) at Meeteetse, Wyoming. During that time, the State of Wyoming has taken the lead in recovery activities, while the Fish and Wildlife Service, other Federal agencies, and private landowners have been working with the State to learn more about the species.

The Service's Denver Wildlife Research Center (DWRC) and the Region 6 Endangered Species Office have shared the responsibility for conducting research and planning operational programs for this species. The complexity of coordinating the research program with the recovery plan, monitoring recovery activities, and interacting with State, Federal, and private organizations has created the need to assign an individual full-time to our black-footed ferret project.

Max Schroeder, a research biologist with the DWRC, located in Fort Collins, Colorado, has been assigned to the FWS Region 6 Endangered Species Office, and will serve as the regional black-footed ferret specialist. His responsibilities are to coordinate research and management activities with all involved agencies and organizations, and to make recommendations for management and research activities leading to recovery of this species.

The U.S. Air Force is considering mitigation for the Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*). This Category 1 candidate for listing could be significantly impacted by installation of the Peacekeeper (MX) missile system at Warren Air Force Base in Cheyenne, Wyoming. On November 10, 1983, there was a meeting in Wyoming that looked at new alternatives being developed expressly to lessen any impacts on the plant. The Air Force has also indicated that funds would be made available to study the plant and to make sure that viable plant populations will still remain when the system is completed.

A footnote to the above is that the Colorado butterfly plant is covered under a conservation agreement between the Service and the Air Force. The Air Force chose to cooperate fully in the protection of the species. A special thanks goes to Mr. George Cormier, Environmental Engineer for Warren Air Force Base.

Assessment

continued from page 1

vice as being under petition; the remaining candidate taxa in these 1980 and 1983 notices are treated as if they are under petition.

Since 1978, the national effort in preliminary assessment of vulnerable plants has become an activity initiated by the Service, in collaboration with plant experts across the country. This activity represents a Service commitment to the general Congressional intent of Section 12 of the Act to continue a broad and detailed evaluation of the vulnerability of U.S. plants.

Such comprehensive notices will be provided regularly for land-use planning in order to help forestall any potential conflicts, since proposed and final rules address only a few species at a time. A similar notice for some vulnerable native vertebrates was published in the December 30, 1982, *Federal Register* (see the January 1983 BULLETIN), and a notice for rare native invertebrates is in preparation.

Supplement

The 1980 plant notice remains current and should be consulted for the approximately half of the candidate plants that did not need any updating. If a 1980 entry on a taxon needed any revision, the 1983 supplement includes the complete revised entry.

top to bottom: A total of 792 of the plants of the revised notice are from the State of Hawai'i, the highest number of any State. One of its native gardenias, the nanu (*Gardenia brighamii*), is a showy, fragrant relative of the cultivated species. In the Hawaiian Islands, this member of the coffee family is a tree, and is vulnerable to the loss of native forest habitat. California has the second highest State total of plants on the notice, 658. One of them, the Shirley Meadows mariposa (*Calochortus coeruleus* var. *westonii*), is jeopardized by expansion of a ski resort and certain logging practices. Its future may improve under a conservation agreement being negotiated between the Sacramento Endangered Species Office and officials of Sequoia National Forest. The habitat of a plant known only from a few sites in Utah and Colorado, the Graham beardtongue (*Penstemon grahamii*), is subject to exploration and development of oil, gas, and oil shale deposits. These are among the 992 plants in Category 1 for which the Service has substantial information on vulnerability and threats to support the appropriateness of proposing them for listing.



Photo by Derral Herbst



Photo by Jim Bartel



Photo by Larry England

top to bottom: The Pine Barrens boneset (*Eupatorium resinosum*) is now known only from sites in New Jersey and North Carolina, and its habitat is subject to plant succession, development of pine tree farms, and land clearing for agriculture. Another plant, which occurs along rocky river banks in the Appalachian Mountain sections of Pennsylvania, Maryland, West Virginia, Kentucky, Tennessee, and North Carolina, is called a Barbara's buttons (*Marshallia grandiflora*). It has been added to the plant notice for the first time. A number of populations have been inundated by reservoirs, and it currently faces other threats. Another plant that appears on the notice for the first time this year is *Lupinus aridorum*, a species that has been known for some time but was described only last year. It is one of the 190 Florida plants of the revised notice. The main threat to this plant is conversion of its sandhill habitat in central Florida for urbanization. The Service is seeking additional data on the status of these plants and 1,565 others in Category 2.

While the Service had published in the July 1975 *Federal Register* a major notice of review on the Smithsonian Institution's report, the 1980 assessment was the first one that was compiled by the Service (see the January 1981 BULLETIN for details). The 1980 notice introduced the innovation of grouping plant taxa in several categories, in order to accurately reflect the Service's evaluation and documentation of their conservation status. In a slightly revised form, these categories are presented in the supplement, and they apply to all of the 1980 and 1983 taxa. As explained below, taxa are placed in Categories 1 or 2 on the basis of adequacy of information now available to the Service, not their degree of endangerment. Taxa in Category 1 could be proposed as either Endangered or Threatened species, as could taxa in Category 2.

Category 1 now includes 816 taxa for which the Service currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list the taxa as Endangered or Threatened species. Currently, data are being gathered on whether or not it is prudent to designate Critical Habitat for each taxon. For many, data concerning the precise boundaries for Critical Habitat designations are also being gathered. This category additionally includes 186 plants (mostly from Hawai'i) that are possibly already extinct, but which still may be located if intensive field work is undertaken. Twenty-one plants have been rediscovered that were classified as possibly extinct in 1980.

Category 2 comprises 1,568 taxa for

which information now in possession of the Service indicates that proposing to list the taxa as Endangered or Threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support proposed rules. Further biological research and field study usually will be necessary to ascertain the status of the taxa in Category 2, and some of these taxa are of uncertain taxonomic validity. Twenty-eight of the plants may be extinct. It is likely that some of the taxa will not warrant listing, while some will be found to be in greater danger of extinction than some taxa in Category 1.

Categories 1 and 2 include those plants considered by the Service as official candidates for Federal listing as Endangered or Threatened species. They are therefore recommended for



Photo by Larry E. Morse



Photo by Larry E. Morse



Photo by A. Robinson

consideration in environmental planning, such as in impact analyses prepared in accordance with the National Environmental Policy Act of 1969. It is the policy of the Service to advise developers of these candidates when inquiries are made on species that are already listed or proposed for listing. Federal land-managing agencies and others with the authority to conserve species prior to their listing under the Act as Endangered or Threatened now have a more up-to-date guidance document. Earlier consideration of these taxa in the planning process should lead to fewer potential land-use conflicts since there is likely to be greater flexibility when accommodating the needs of such plants at an early stage.

The Service's comprehensive assessment of candidates is expected to undergo future revision and remain dynamic; however, because it covers most native vascular plants that are vulnerable to extinction, it should bring greater stability to land-use analyses. Only 103 candidate taxa in the 1983 supplemental notice were not included in the 1975 or 1980 notices.

Non-Candidates

Category 3 comprises 1,319 taxa that are no longer being considered for listing as Endangered or Threatened species. It demonstrates the improved knowledge on these taxa in the past 9 years; 536 of the taxa being moved from Categories 1 or 2 into Category 3 were done so on the basis of data developed by or brought to the attention of the Service since 1980. Of these 536 newly categorized taxa, 7 are placed in subcategory 3A (extinct), which brings the total of known extinct plants to 58; 71 are in subcategory 3B (synonyms of more common plants, or plants found to be botanical forms or hybrids), thus emphasizing the need for continued taxonomic studies; and 458 are in subcategory 3C (taxa more abundant or widespread than was previously believed, and/or not subject in the foreseeable future to any identifiable threat).

Information Solicited

It is hoped that the 1980 notice with the 1983 supplement will encourage the necessary research on vulnerability, taxonomy, and/or threats for the taxa remaining in Category 2, and on Critical Habitat for the taxa in Category 1. The Service requests that any pertinent information on any of the remaining candidates be submitted, on a continuing basis, to the appropriate regional (or field) offices. Information on the intensity and immediacy of threats to any of the taxa is especially welcome. For help on organizing detailed status information intended for submission to the Ser-

vice, contributors are encouraged to use the status report guidelines of Henifin *et al.*, pages 261-282 in L.E. Morse and M.S. Henifin, editors, *Rare Plant Conservation*, 1981, The New York Botanical Garden, Bronx, New York. These guidelines are used by the Service in contracting for plant status surveys, and copies are available from the Service.

Copies of the 1980 notice and the 1983 supplement are available upon request from the proper regional or field offices of the Service, or from the Washington Office of Endangered Species. An integrated computer compilation of the two notices, and similar compilations of the plant taxa by State and by family, will be available shortly.

Nine Species

continued from page 1

has suffered a severe decline in recent years. A 1983 survey indicates that the population probably numbers fewer than 100 birds, and is restricted to about 150 acres at the north end of the island.

- Micronesian kingfisher (*Halcyon cinnamomina cinnamomina*). This subspecies is endemic to Guam and, unlike many members of the kingfisher family, is associated with forests rather than water habitat. Although it was considered common as recently as 1945, the Micronesian kingfisher declined drastically over the last few years. It is now restricted to less than one-fourth of its original range. Recent surveys indicate that the downward trend is continuing.
- Bridled white-eye (*Zosterops conspicillata conspicillata*), or *noosa*. Another subspecies endemic to Guam, this small, yellowish bird formerly was distributed island-wide. In 1981, 2,000 were estimated to remain in northern Guam. However, in searches during the last few months of 1983, none have been located. It is feared that this subspecies may now be extinct.
- Guam rail (*Rallus owstoni*), or *koko*. The Guam rail is the only surviving endemic rail in Micronesia. This flightless, ground dwelling bird was distributed historically over all of Guam in grasslands and forest habitat. After a major population drop in recent years, estimates are that fewer than 100 remain in northern Guam.
- Mariana crow (*Corvus kubaryi*), or *aga*. The Mariana crow is the only native crow found in Micronesia. This bird occurs on Guam and Rota. Formerly, it was distributed throughout both islands; in recent

decades, however, the Mariana crow population on Guam has been reduced to 150-200 birds confined to the northern section of the island. On Rota, the crow is uncommon but it has not suffered the losses experienced on Guam. The Rota population was estimated in 1982 at about 1,300 birds.

- Mariana gallinule (*Gallinula chloropus guami*) or *pulattat*. Although the common gallinule is distributed worldwide, this subspecies is restricted to the Mariana Islands. It occurred historically in the freshwater wetlands of Guam, Saipan, Tinian, and Pagan. The loss of wetland habitat is believed to have led to a reduction in distribution and population size. Currently, the gallinule population numbers about 100-200 birds on each island. Pagan is thought to support no more than 10 birds. The populations appear stable, but are very restricted and highly susceptible to any disruption of the remaining wetlands.
- Vanikoro swiftlet (*Aerodramus vanikorensis bartschi*), or *yaya-huak*. This subspecies historically was found on Guam, Agiguan, Saipan, Rota, and Tinian of the southern Mariana Islands, but the Rota and Guam populations apparently have virtually disappeared in the last few years. As few as 50 of this cave-dwelling bird are thought to remain on Guam, and none were found on Rota in a 1982 survey. Tinian at one time apparently supported a minor population, but none were found there in 1982. A small, declining population survives on Saipan, and its situation on the tiny island of Agiguan appears to be stable.

The dramatic decline in recent years of Guam's native avifauna was featured in the January 1983 BULLETIN (see "Forest Birds of Guam in Critical Danger," by John Engbring of the Fish and Wildlife Service's Honolulu Environmental Services Office). Given the rapid nature of the decline, a likely cause is the spread of avian diseases. Introduced birds and mosquitos could be functioning as disease reservoirs, harboring such pathogens as avian pox or avian malaria to which the native birds may have little or no resistance. Using Pittman-Robertson and Endangered Species Act grants, the Guam Aquatic and Wildlife Resources Division (GAWRD) has initiated studies on the presence and extent of avian diseases.

Recent studies by the GAWRD suggest that the introduced brown tree snake (*Boiga irregularis*) may be playing a major role in the reduction of Guam's native birds. The brown tree snake, also

known as the Philippine rat snake, is now widespread on Guam, and this arboreal species is known to feed on birds and bird eggs. Little is known about the ecology of the snake, and studies have been initiated by GAWRD. Methods of control are also being investigated.

Several other factors are suspected as contributing to the declines. One of the suggested causes is habitat loss. Large portions of Guam's native forests have been destroyed as a result of human activities, and the reduction in the bird populations probably can be attributed, in part, to this loss. However, it does not appear to be a major factor in the recent, very rapid decline since there are remnants of good habitat on Guam that are completely devoid of bird life. Predation by exotic animals could also be affecting Guam's native species. The introduced monitor lizard (*Varanus indicus*) is fairly common. Cats, dogs, and rats have been established on Guam as well, and these exotics have caused major problems in other small island ecosystems.

Environmental contaminants have been suggested as a potential cause for declines in the past. The heavy use of DDT and other chlorinated hydrocarbons during World War II, along with the widespread use of agricultural pesticides since that time, may have had an impact on forest birds, particularly insectivores. However, preliminary results from a 1981 pesticide study show no problems for the birds from current pesticide use.

The two mammals in the proposed listing rule have been jeopardized even more directly by human pressures:

- Mariana fruit bat (*Pteropus mariannus mariannus*), or *fanihi*. This bat, which is known from throughout the Mariana archipelago, still occurs on all islands of its historical range. Its numbers on Guam, however, have fallen sharply to the current level of 850-1,000 individuals, and the population is in need of immediate protection from the problem of illegal take for human consumption. Systematic surveys are planned to determine the status of this subspecies on the other islands.
- Little Mariana fruit bat (*Pteropus tokudae*). This Guam endemic has always been less common than *Pteropus mariannus mariannus*, and is subject to the same problems. No *Pteropus tokudae* have been captured since the 1960s, and the species may already be extinct.

As in the case with forest birds, habitat loss does not seem to be a significant factor at this time in the decline of Guam's fruit bats since there are remnants of apparently suitable habitat on the island that are not occupied. The

main cause for the decrease in both bats is poaching. Fruit bats are considered prized delicacies by some Guamanians, and the animals command high prices. Hunting fruit bats on Guam is now illegal, and they may not be imported without a permit; nevertheless, they are still in strong demand. Almost 11,000 fruit bats were imported to Guam from other islands in the Mariana group under permit during Fiscal Year 1982. A steady demand, coupled with a projected future decline in imports, will undoubtedly put more pressure on the remaining, depleted fruit bat population on Guam. Accounts of harassment and attempts to poach local colonies continue.

All nine of the species proposed for listing were included in two listing petitions received from the Government of Guam in 1978 and 1979. Three other species that were covered in the petitions but are not being proposed for listing at this time are the Mariana fruit dove (*Ptilinopus roseicapillus*), white-throated ground dove (*Gallicolumba xanthonura xanthonura*), and cardinal honey-eater (*Myzomela cardinalis safordi*). Although these birds have declined sharply on Guam, they are still considered common on one or more of the other Mariana Islands. As additional information is gathered on these taxa, the Service will further consider the need to list them.

The seven birds and two bats in the proposed rule are already on Guam's own Endangered Species List, and are thereby protected under The Endangered Species Act of Guam (P.L. 15-36). If the rule is approved, these species would be given additional protection by the Federal Government under the Endangered Species Act of 1973, as amended. All Federal conservation regulations in 50 CFR 17.21 would apply, including the prohibitions on take, possession, and interstate/international trafficking without a permit. Further, all Federal agencies would be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the listed species by directly affecting the animals or by adversely modifying their habitat. A formal designation of Critical Habitat was not included in the proposed rule because there is not enough information currently available to make such a proposed designation; nevertheless, the nine species would receive the full Section 7 protection if listed.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and are due to the Regional Director, Region 2, by January 13, 1984. (See page 2 of the BULLETIN for address.)

Florida Pine Barrens Treefrog Removed from List

The Florida population of the Pine Barrens treefrog (*Hyla andersonii*) has been removed from the U.S. List of Endangered and Threatened Wildlife (F.R. 11/22/83). This action was taken because recent evidence indicates that the species is much more widely distributed than originally known and because there is not currently a significant trend in loss of the species' habitat.

This colorful amphibian has a green back, a white belly, and a lavender band extending along the sides from the nostrils to the hind limbs. Adults are 30 to 50 mm in snout-vent length. The species occurs in small, isolated populations scattered along the Atlantic and Gulf Coastal Plains, primarily in three areas: the Pine Barrens of New Jersey, the sandhills of North and South Carolina, and the western panhandle of Florida/southern tip of Alabama. Chorusing Pine Barrens treefrogs are usually associated with evergreen shrubs in sphagnum seepage bogs on hillsides below pine-oak ridges.

Based on the data available at the time, the Service listed the Florida population of the Pine Barrens treefrog as Endangered in 1977. Its numbers were estimated at fewer than 500, and the only known breeding sites were limited to seven small areas in Okaloosa County. Since four other breeding groups were thought to have been extirpated since 1970, it appeared that the remaining Florida population was in danger of extinction. In the spring of 1978, the Florida Game and Fresh Water Fish Commission began a project to assess the species' habitat needs and distribution limits.

Survey results for 1978 and 1979 revealed a more extensive distribution for the treefrog than originally known. In January 1980, the Commission submitted a report, entitled "The Florida Population of the Pine Barrens Treefrog (*Hyla andersonii*), A Status Review," recommending that the species be removed from the U.S. List of Endangered and Threatened Wildlife. A supplemental report in June 1980 presented data expanding the known Florida distribution from seven Okaloosa County sites to over 150 sites in Okaloosa, Walton, Santa Rosa, and Holmes Counties. A considerable amount of potential habitat was not surveyed, and much of it is considered likely to harbor the species.

Investigations conducted in nearby Alabama areas revealed six other sites in Escambia and Covington Counties. To gain a more complete picture of the Florida/Alabama population as a whole, the

Service contracted in 1980 for a thorough status survey of the Pine Barrens treefrog in southern Alabama. An additional 16 sites in the Geneva-Escambia-Covington County area were discovered. Although the frogs in Alabama were not listed under the 1977 rule, knowledge of their existence does provide further evidence of the species' overall well-being in what is a much larger range than that originally known.

The data gathered from 1977 to 1980 did not substantiate a major threat to the Pine Barrens treefrog habitat. Destruction of bogs by such actions as draining for agriculture or construction of impoundments does represent a potential threat, but many of the known treefrog breeding sites are on public lands that presumably will not be subject to extensive development. On the basis of the expanded distribution and the relatively secure habitat outlook, the Service proposed on September 15, 1982, to delist the Florida population of the Pine Barrens treefrog and rescind its designation of Critical Habitat. In accordance with the November 22, 1983, final rule, the species and its habitat will no longer be covered under the Endangered Species Act.

Delisting Proposed for Southeastern Brown Pelican

The Service has proposed to remove the brown pelican (*Pelicanus occidentalis*) from the U.S. List of Threatened and Endangered Wildlife in Alabama, Florida, Georgia, South Carolina, North Carolina, and points northward along the Atlantic Coast (F.R. 11/10/83). Currently, this bird is listed as Endangered throughout its entire range, which includes (in addition to the area that would be affected by this proposal) Mississippi, Louisiana, Texas, California, the West Indies, and both coasts of Mexico, Central America, and South America. The proposed change in designated status is based on evidence that, due to large, stable population numbers and productivity rates, the brown pelican is no longer in danger of extinction within the subject area. The legal status of brown pelicans outside the area described in the rule would not be affected.

Background

The brown pelican is one of two species of pelicans in North America; the other is the white pelican (*Pelicanus erythrorhynchos*). A coastal bird, the brown pelican is rarely found away from salt water and it normally does not venture more than about 20 miles out to sea. It

feeds almost entirely on fishes captured by plunge diving. An adult pelican can weigh up to 8 pounds and have a wingspan of 7 feet. Brown pelicans generally nest on small (less than 5 acres) coastal islands, either on the ground or in shrubs or trees. These islands may be natural in origin or dredge spoil sites.

Historically, large numbers of eastern brown pelicans nested in Texas, Louisiana, Florida, and South Carolina, and a smaller number nested in North Carolina. (There were no verified reports of nesting in Mississippi, Alabama, Georgia, or the States north of North Carolina until July 1983, when four pairs were found trying to nest on a spoil island in Mobile Bay, Alabama.) Between 1951 and 1961, the brown pelican disappeared as a nesting species on the Louisiana coast and seriously declined on the Texas coast. The severity of the decline, indicated by the fact that the population in these two States formerly may have numbered about 50,000 birds, suggested that a highly toxic substance was to blame.

Some years later, in the late 1960s and early 1970s, brown pelican populations in South Carolina showed evidence of decreased reproduction, primarily resulting from eggshell thinning.

Organochlorine pesticide pollution has been implicated as the cause for both declines—Endrin in Louisiana and Texas, and DDT (and its principal metabolite DDE) in South Carolina. The birds were affected in two ways: Endrin was directly toxic to all age classes. DDE, on the other hand, resulted in impaired reproduction by accumulating in the birds' tissues and then interfering with calcium deposition during eggshell formation. This resulted in the production of thin-shelled eggs that were easily crushed during incubation.

When the dangers of these persistent pesticides became better known, the Environmental Protection Agency banned most uses of DDT in the United States and sharply curtailed the use of endrin. As a result, residual levels of these organochlorines in the environment have decreased steadily in most areas. There has been a corresponding increase in the eggshell thickness and reproductive success of brown pelicans, as well as many other avian predators such as the bald eagle and peregrine falcon. Currently, in Florida and the Carolinas, brown pelican numbers are at or above historical levels, and the average annual fledging rate is greater than or equal to the level of one young per nest considered necessary to maintain a stable population. Based on these data, the Eastern Brown Pelican Recovery Team recommended in 1981 that this bird be removed from the U.S. List of Threatened and Endangered Wildlife in these States and adjacent portions of its

range.

If the proposed delisting rule is approved, it would constitute a recognition of the brown pelican's recovery in the subject area, and would remove this bird and its habitat from the protection authorized under the Endangered Species Act. Nevertheless, taking or injuring brown pelicans would continue to be prohibited by the Migratory Bird Treaty Act and applicable State laws. Moreover, much of the brown pelican's nesting habitat would continue to be protected from human intrusion and development. Over 50 percent of Florida's brown pelicans nest on sites managed for wildlife by the Federal Government, National Audubon Society (NAS), and other conservation organizations. In North Carolina, the three longest standing brown pelican colony sites are being acquired by the NAS, and one of the two sites in South Carolina is located in Cape Romaine National Wildlife Refuge. Both North and South Carolina are attempting to stabilize nesting sites from erosion by using dredge spoil material. The spoil island in Mobile Bay, Alabama, on which four brown pelican nests were found last July is being monitored by the U.S. Army Corps of Engineers, the agency whose activities created the island. Additional consideration of brown pelican habitat in planning Federal projects would be authorized under the Fish and Wildlife Coordination Act, Sections 402 and 404 of the Federal Water Pollution Control Act (as amended by the Clean Water Act), and other laws. Federal funding of brown pelican research or monitoring programs also could continue under several other conservation statutes. Existing State laws protecting the brown pelican could continue to apply.

Public Comment Requested

Comments on the proposed rule are requested from all interested agencies, organizations, and individuals, and are due to the Field Supervisor, Endangered Species Field Station, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 3185, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213-7685 by January 9, 1984.

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

Status Review Begun for Three Fishes

The Service has begun a review of the status of the amber darter (*Percina antea-sella*), trispot darter (*Etheostoma tri-sella*), and reticulate logperch (*Percina* sp.). Based on the information received in response to the notice of review (F.R. 11/4/83), along with data gathered during a status survey just completed under contract, the Service will decide if these species and their habitats should be proposed for protection under the Endangered Species Act.

Both the trispot darter and reticulate logperch appear to be restricted to about 20 miles of the Conasauga River in Murray and Whitfield Counties, Georgia, and Bradley and Polk Counties, Tennessee. The amber darter exists in this same short stretch of the Conasauga River; a single specimen has been reported also from one locality on the Etowah River in Cherokee County, Georgia. Populations of the amber and trispot darters in other areas were lost when impoundments flooded their free-

flowing stream habitats. Water development projects now being considered for the upper Conasauga River could threaten the survival of the remaining populations if construction plans do not take into account the habitat requirements of these species. Due to their limited distribution, they are vulnerable also to any factors that could degrade

the water quality, including siltation and chemical spills.

All interested persons, organizations, and agencies are invited to submit information on the species, their habitats, and current or planned activities that may adversely affect them. All comments should be sent to the Field Supervisor, Endangered Species Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 by February 2, 1984.



Photo by Bruce Bauer

The trispot darter is unique among darters in that it spawns in shallow, marshy areas in fields and woods. Until fairly recently, it was thought to be extinct.

Dusky Seaside Sparrow Cross-breeding Update

by David Peterson

Jacksonville Endangered Species Field Station

Several years ago, when the wild population of the dusky seaside sparrow (*Ammospiza maritima mirabilis*) had dropped to only six known individuals, all of them males, five of the birds were captured and placed in holding cages at the Florida Game and Fresh Water Fish Commission's Research Lab in Gainesville, Florida. (The sixth bird had disappeared before it could be captured). There they were cross-bred with female Scott's seaside sparrows (*A. m. peninsularae*), a more plentiful, closely related subspecies, in an effort to conserve at least some of the dusky genetic stock. The offspring were kept at the Florida State Museum, while the male dusksies were subsequently transferred to specially designed housing at the Santa Fe Community College Teaching Zoo in Gainesville.

While the males remained in captivity, intensified efforts were made to locate any female dusksies still remaining in the wild, as well as to develop a technique to collect and preserve dusky semen. When it became apparent that efforts to locate female dusksies would be unsuccessful, Florida State Museum and Florida Audubon Society personnel submitted a proposal to the Service to conduct a cross-breeding and back-



Photo courtesy of "Walt Disney Productions"

One of the few remaining dusky seaside sparrows

crossing program for the dusky. If successful, the 5-year program would have resulted in progeny with more than 98 percent of the dusky genotype.

That proposal was not approved, but a

second one, submitted by the Florida Audubon Society and Walt Disney World, was approved last spring. The proposal involved cross-breeding the male dusksies with a closely related sub-

Dusky

continued from page 11

species, either the Scott's or the Wakulla seaside sparrow (*A. m. juncicola*), as well as the hybrids from the previous mating several years ago. During this year's breeding season, the birds were maintained at the Teaching Zoo, then transferred to Walt Disney World's Discovery Island Zoological Park for the remainder of the program. At Discovery Island, special holding facilities have been constructed, and an endangered species information and education program is being built around the dusky. One of the duskies died at the Teaching Zoo on September 10, and Walt Disney World was given the specimen for mounting and display. While the dusky will be featured, the conservation education program will include the plight of other endangered species as well.

Murphy's Law prevailed during last spring and summer's breeding season: almost everything that could go wrong did go wrong. Some of the hybrid birds that, based on their behavior, previously had been identified as females turned out to be males. Some of the wild-caught birds, none of them duskies, died mysteriously while in quarantine. As a precaution, the survivors were not placed with the male duskies until the mortality cause could be determined. Other pairs were, for some reason, incompatible. As a result, only one female was productive. While caged with the first of two dusky mates, a hybrid female constructed four nests in which she laid a total of six eggs. After a suitable incubation period had elapsed without the eggs hatching, they were examined and none showed any sign of embryo development. The female was then moved to a second cage with a different male, where she promptly constructed a fifth nest and laid three more eggs. These eggs fol-

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	19
Birds	51	14	144	3	0	0	212	41
Reptiles	8	6	60	8	4	12	98	6
Amphibians	4	0	8	3	0	0	15	3
Fishes	30	3	11	12	1	0	57	23
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	3
Plants	56	2	0	10	1	2	71	10
TOTAL	200	43	449	49	8	36	785	115**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of species currently proposed for listing: 34 animals
26 plants

Number of Species with Critical Habitats determined: 59
Number of Recovery Plans approved: 107
Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

November 30, 1983

lowed the same pattern; however, because of the short interval involved, it is possible that the eggs were the result of a mating with the first male.

On August 1, she gave it one more try and started a sixth nest. Under normal climatic conditions, this probably would have been beyond the usual breeding season, but a late spring in Florida delayed the onset of the breeding season and possibly accounted for the extended period. The first of two eggs was laid on August 4. It hatched on August 25, and the young bird left the

nest shortly thereafter. The second egg disappeared, and no one knows what happened to it.

By September 29, all of the remaining duskies and dusky hybrids had been transferred to Discovery Island. Walt Disney World has requested Service representation on an advisory committee to address questions and problems that might arise during the life of the program, which is expected to last at least another 4 years, but any other Service involvement with the dusky in the future is expected to be minimal.

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1983 INDEX

January 1983 - December 1983
Volume VIII, Numbers 1-12

PUBLIC DOCUMENTS
DEPOSITORY ITEM

AUG 1 1984

CLEMSON
LIBRARY

Aerodramus vanikorensis bartshi. See Swiftlet,
Vanikoro

Agave arizonica, proposed E, background, photo,
Jun, 1

Ailuropoda melanoleuca. See Panda, giant

'Akepa, Hawai'i, recovery plan approved,
illustration, Jun, 4-5

'Akiapola'au, recovery plan approved,
illustration, Jun, 4

Albatross, short-tailed, 4 in AK, Sept, 7

Alligator, American, reclassified in TX as
Similarity of Appearance T, range-status
map, Nov, 5

Alligator mississippiensis. See Alligator,
American

Amblyopsis rosae. See Cavefish, Ozark

Ambrysus amargosus. See Naucorid, Ash Meadows

Ammospiza maritima mirabilis. See Sparrow,
dusky seaside

Anas laysanensis. See Duck, Laysan

Anole, Culebra Island "Giant," recovery
plan approved, Jun, 7

Anolis roosevelti. See Anole, Culebra Island
"Giant"

Antilocapra americana sonoriensis. See
Pronghorn, Sonoran

Aplonis opaca quami. See Starling, Micronesian

Aproteles bulmerae. See Bat, Bulmer's flying
fox fruit

Ara caninde. See Macaw, caninde

Ara rubrogenys. See Macaw, red-fronted

Argyroxiphium sandwicense, listing candidate,
photo, Dec, 1

Ash Meadows, NV: temporary protection extended
for fishes, unique ecosystem, Jan, 4;
final E for fishes, Sep, 3; proposed E
for 7 plants and 1 insect, threats to
ecosystem, photos, Nov, 1, 8-10

Ass, African wild, CITES proposal, Jan, 3

Astragalus beatleyae, Conservation Agreement,
Nov, 10

Astragalus montii, hearing on proposed listing,
Oct, 7-8

Astragalus phoenix, proposed E, photo,
Nov, 8-9

Bass, striped, status review, background,
Feb, 4

Bat, Bulmer's flying fox fruit, proposed E,
Apr, 1

Bat, bumblebee, proposed E, Apr, 1

Bat, ghost, proposed E, Apr, 1

Bat, Indiana, New Mammoth Cave gate project,
Sep, 6

Bat, little Mariana fruit, proposed E,
Dec, 9

Bat, Mariana fruit, proposed E, Dec, 9

Bat, Ozark big-eared, hibernaculum disturbed,
Mar, 9

Bat, Rodriguez flying fox fruit, proposed E,
Apr, 1

Bat, Singapore roundleaf horseshoe,
proposed E, Apr, 1

Bat, spotted, field survey, Apr, 7

Batrachoseps aridus. See Salamander, desert
slender

Bear, grizzly: trend monitoring system,
Yellowstone population data, Jun, 7;
interagency committee, Jul, 11;
horse-patrol protection, Aug, 2,
Sep, 2

Beardtongue, Graham. See Penstemon grahamii

Beetle, Delta green ground, data collation,
Mar, 2

Beetle, valley elderberry longhorn, habitat
survey, Mar, 2

Berberis sonnei, site visit, preparation for
cuttings, Jan, 2

Birds: Guam forest species in critical danger,
12 listed, survey results, photos,
Jan 6-8; recovery plans for 5 Hawai'i
species, photos, Jun, 4-6; raptor exemption
rule finalized, Aug, 6

Blazing star, Ash Meadows. See Mentzelia
leucophylla

Bluebird, Eastern, MN highway nesting-hole
project, Apr, 5-6

Bobcat: Amendment on final export findings,
proposed 82-83 findings, May 4; final
82-83 findings, May, 3, 7

Bobwhite, masked: only U.S. habitat sold,
Feb, 2; worsening status, Aug, 9; Sonora
call-count surveys, Sep, 6

Bioga irregularis. See Snake, brown tree

Boneset, Pine Barrens. See Eupatorium resinotum

Branta canadensis leucopareia. See Goose,
Aleutian Canada

Branta sandvicensis. See Goose, Hawaiian

Broadbill, Guam: in critical danger,
Jan, 7; proposed E, Dec, 1, 8

Bubo virginianus. See Owl, great horned

Bufo hemiophrys baxteri. See Toad, Wyoming

Bugeranus carunculatus. See Crane, wattled

Butterfly, Bahama swallowtail, delisted,
Sep, 4

Butterfly, mission blue, incidental take,
Feb, 7

Butterfly, Oregon silverspot, draft conservation
agreement, Apr, 2

Butterfly, San Bruno elfin, incidental take, Feb, 7
 Butterfly, Schaus swallowtail, status change from T to E, photo, Sep, 4
 Butterfly plant, Colorado. See Guara neomexicana ssp. coloradensis
 Buttons, Barbara's. See Marshallia grandiflora

Cactus, Key tree. See Cereus robinii
 Caiman crocodilus yacare. See Yacare
Callithrix flaviceps. See Marmoset, buff-headed
Callophrys mossii bayensis. See Butterfly, San Bruno elfin

Calochortus coeruleus var. westonii, in jeopardy, photo, Dec, 6
Camissonia benitensis, proposed E, DRV habitat destruction, Nov, 6-7
 Candidates for listing, Conservation Agreements to aid, Feb, 7

Canis lupus. See Wolf, gray
Canis lupus baileyi. See Wolf, Mexican
Canis rufus. See Wolf, red

Caribou, woodland: emergency E, Selkirk Mountain habitat, photos, Jan, 1, 4; proposed E, population threats, Jul, 5, 11; comment period reopened, Oct, 7; second emergency rule, Nov, 7; one shot in Canada, Dec, 2

Carpobrotus ssp. [= Mesembryanthemum ssp.], removal from kangaroo rat habitat, Apr, 2

Castilleja salsuginosa, to be observed and mapped, Oct, 2

Cat, Pakistan sand, proposed E, Apr, 1

Catfish, Yaqui, proposed T, Aug, 1, 5

Catostomus fecundus. See Sucker, Webbug

Cavefish, Ozark, population surveys, May, 2

Centaureum namophilum var. namophilum, proposed E, Nov, 1

Centaury, Spring-loving. See Centaureum namophilum var. namophilum

Cereus robinii, proposed E, background, photo, Aug, 4

Charadrius melodus. See Plover, piping

Chasmistes cujus. See Cui-ui

Chasmistes liorus. See Sucker, June

Checker-mallow, pedate. See Sidalcea pedata

Chelonia mydas. See Turtle, green sea

Chub, bonytail, Mohave stocking, Jun, 2

Chub, Borax Lake, habitat management lease, Dec, 2

Chub, Chihuahua, T listing, habitat photo, Nov, 3-4

Chub, humpback: lawsuit appeal, Jan, 5; Windy Gap Study on, Apr, 7-8

Chub, least, status report, Jan, 5

Chub, Mohave tui, Advisory Group meeting, Jan, 2

Chub, Yaqui, proposed E, photo, Aug, 1, 5

Cisco, longjaw, removed from list, extinct, Oct, 3

CITES. See Convention on International Trade in Endangered Species of Wild Fauna and Flora

Cliffrose, Arizona. See Cowania subintegra

Colinus virginianus ridgwayi. See Bobwhite, masked

Collomia rawsoniana, range survey, Oct, 2

Colobus, Preuss's red, proposed E, Apr, 1

Colobus badius preussi. See Colobus, Preuss's red

Colorado River Fishery Project: first annual report, Mar, 9; final report, Aug, 9

Condor, Andean, surrogate chick nudged out of nest by California condor, Jun, 7

Condor, California: research and captive propagation update, radio tracking, Jan, 3; egg-taking, captive-breeding, radio-tagging updates, Mar, 8; first 2 chicks hatched in captivity, photo, Apr, 3; 3 more chicks hatched, triple clutching, Andean surrogate chick nudged out of nest, Jun, 7; chick is only known captive female,

another chick hatches in wild, Jul, 8; proposed acquisition of ranch foraging area, Sep, 2

Coneflower, Tennessee. See Echinacea tennesseensis

Conservation Agreements, as aid to listing candidates, Feb, 7

Consultation, interagency, proposed revised rules, Jul, 1, 1D

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): proposed amendments on 11 animals and 24 plants announced, Jan, 3, 8; export approvals, Feb, 5; sea turtle import ban under review, Feb, 5; foreign proposals on amendments, trade in ranched specimens, Apr, 3, 8; fourth meeting in Botswana, species changes, Aug, 7; Western Hemisphere seminar on strengthening, Aug, 8; proposed rule changes in Appendix II exports, Sep, 7-8; U.S. adopts Botswana amendments, Nov, 11

Coregonus alpenae. See Cisco, longjaw

Corus kubaryi. See Crow, Mariana

Cotton, Hawai'i tree. See Kokia drynarioides

Cottus pygmaeus. See Sculpin, pygmy

Cougar, eastern, recovery plan signed, research, background, Jan, 9

Cowania subintegra, proposed E, Aug, 1, 3

Crane, wattled, CITES proposal, Jan, 3

Crane, whooping: powerline mortality, Feb, 2;

tracking project monitors migrations, Feb, 8; northward migration tracking, powerline kills, Apr, 7; 1983 population, Sep, 6; court blocks NE dam construction, Sep, 7; fall migration, one summered on winter range, Oct, 7; protected from botulism outbreak, Nov, 10; radio-tracking of entire migration route, Nov, 11; population at 103, Dec, 5

Craseonycteris thonglongyai. See Bat, bumblebee

Creeper, Hawai'i, recovery plan approved, Jun, 4

Crocodile, Nile, proposed trade in ranched specimens, Apr, 8

Crocodile, saltwater, proposed trade in ranched specimens, Apr, 8

Crocodylus niloticus. See Crocodile, Nile

Crocodylus porosus. See Crocodile, saltwater

Crotalus unicolor. See Rattlesnake, Aruba Island

Crow, Mariana: in critical danger on Guam, photo, Jan, 7; proposed E, Dec, 8

Cui-ui: run delayed, prespawning aggregate, Jun, 2; spawning run results, Jul, 2, 9, Aug, 2; Pyramid Lake ladder problems, life-history field studies, Sep, 2, 6; age and growth analyses show near extinction, Oct, 7; stream flow analyses, Nov, 2

Cuora trifasciata. See Turtle, Asiatic box

Cyclura species, proposed listings, Feb, 1, 3

Cygnus buccinator. See Swan, trumpeter

Cynomys leucurus. See Prairie dog, white-tailed

Cynomys parvidens. See Prairie dog, Utah

Cyprinodon nevadensis mionectes. See Pupfish, Ash Meadows Amargosa

Cyrtodactylus serpensisinsula. See Gecko, Serpent Island

Dace, Ash Meadows speckled: temporary protection extended, Jan, 4; comment period reopened, May, 5, 8; final E, Sep, 3; population estimate, Sep, 6

Dace, Moapa, recovery plan approved, background, drawing, Aug, 1D-11

Darter, amber, status review, Dec, 11

Darter, paleback, additional spawning sites, Jul, 9

Darter, snail, status review, reclassification possible, Aug, 6-7

Darter, trispot, status review, photo, Dec, 11

Deer, Columbian white-tailed, buck killed, Oct, 2
Dermatemys mawii. See Turtle, Central American river
Desmocerus californicus dimorphus. See Beetle, valley elderberry longhorn
Diomedea albatrus. See Albatross, short-tailed
Dipodomys heermanni morroensis. See, Rat, Morro Bay kangaroo
Dipodomys nitratoides exilis. See Rat, Fresno kangaroo
Discus macclintocki. See Snail, Iowa Pleistocene
Dog, African wild, proposed E, Apr, 1
Dogweed, ashy. See Dyssodia tephroleuca
Dolphin, Indus River, proposed E, Apr, 1
Dove, Mariana fruit, in critical danger on Guam, photo, Jan, 6-7
Dove, white-throated ground, in critical danger on Guam, photo, Jan, 6
Duck, Lysan, recovery plan approved, objectives, photo, Feb, 6
Dunegrass, Eureka Valley. See Swallenia alexandrae
Dyssodia tephroleuca, proposed E, Aug, 4

Eagle, bald: geographic isolation genetics study, Jan, 5; first NC hacking planned, Jan, 5; first adult captive-raised male from PWRC captured in NY, Feb, 2, 8; Bear Valley roost inventory, powerline kills, Mar, 8-9; dead eagle in active FL nest, May, 2-3; Bombay Hook hatching, Greater Yellowstone Management Plan, May, 3; US-Canadian cooperation, Jun, 7; AZ population, mate replacement at nest site, Canadian birds relocated in NJ and PA, Jul, 9; Manitoba to supply eaglets, Sep, 6; fledglings, Oct, 7
Echinacea tennesseensis, recovery plan approved, Jul, 7-8, 12
Elaphrus viridus. See Beetle, Delta green ground
Elassoma sp.. See Sunfish, spring pygmy
Enceliopsis nudicaulis, proposed E, Nov, 8
Endangered Species Act exemptions, Aug, 6, Dec, 4
Endangered or Threatened species: 363 vertebrates listed as candidates, Jan, 5; 5-year review comment-period extended, Mar, 3; NMFS review of 19 marine species, Mar, 4; trade in ranched specimens, Apr, 3, 8; guidelines on listing priorities, May, 4, 7, Sep, 1, 8, Oct, 6; taking regulations changes, Aug, 7
Enhydra lutris nereis. See Otter, southern sea
Epioblasma (=dysnomia) sampsoni. See Mussel, Sampson's pearly
Equus asinus. See Ass, African wild
Eriogonum pelinophilum, proposed E, background, photo, Jul, 3, 5
Etheostoma pallidiorum. See Darter, paleback
Etheostoma trisella. See Darter, trispot
Euderma maculatum. See Bat, spotted
Eumeces fasciatus. See Skink, five-lined
Eupatorium resinosum, additional data sought, photo, Dec, 7
Eureka Valley Dunes, recovery plan approved, background, dunegrass, and evening-primrose habitat, photos, Mar, 10-11
Evening-primrose, Eureka Valley. See Oenothera avita ssp. eurekensis
Evening-primrose, San Benito. See Camissonia benitensis
Exemptions from ES Act: raptor rule, Aug, 6; proposed amendments to regulations, Dec, 4
Export of wildlife and plants: import/export license requirements clarified, Feb, 5; proposed CITES Appendix II changes, Sep,

7-8; see also Convention on International Trade in Endangered Species
Extinctions: Louisiana prairie vole, Jul, 10; Sampson's pearly mussel, Aug, 6; blue pike, longjaw cisco, Oct, 3; Santa Barbara song sparrow, Nov, 8
Falcon, peregrine: VA sightings, Mar, 9; Arctic subspecies, proposed reclassification from E to T, difficulty in distinguishing subspecies, Apr, 4; MN project releases chicks, drawing, Apr, 5-6; great horned owls at hacking sites, Apr, 7; NY and MD bridge nestings, Jun, 2, 7; planned surveys, bandings, Jun, 8; Padre Island trapping, Jul, 9; AK breeding results, Aug, 9; AK survey results, turnover rate, Sep, 7; Salmon River survey, Oct, 2; Peregrine Fund activities, Oct, 7; west TX eyrei production, proposed ME releases, Nov, 10-11; reintroduction plans, Dec, 5
Falco peregrinus. See Falcon, peregrine
Fantail, rufous-fronted, in critical danger on Guam, Jan, 7
Federal agencies, revised rules on consultation among, Jul, 1, 10
Felis concolor cougar. See Cougar, eastern
Felis margarita scheffeli. See Cat, Pakistan sand
Felis pardalis. See Ocelot
Ferret, black-footed: WY coordinator named, Jan, 5; Meeteetse management plan, Feb, 8; only known population receiving careful attention, research, advisory team, recovery plan, grants for State projects, photos, Mar, 5-8; postmortem exams of 2, Mar, 9; management and recovery documents, Apr, 7; draft management guidelines, Advisory Team meeting, oil company cooperation, May, 3; Advisory Team meeting, Aug, 9; workshops on survey techniques, Sep, 6-7; full-time coordinator for research and management, Dec, 5
Fishes: Colorado River Project, Mar, 9, Aug, 9; proposed listing for 3 Rio Yaqui species, photos, Aug, 1, 5
Four o'clock, MacFarlane's. See Mirabilis macfarlanei
Fox, San Joaquin kit, recovery plan approved, background, zonation of range, map, photo, May, 6-7
Frankenia johnstonii, proposed E, Aug, 3
Frog, Pine Barrens tree. See Treefrog, Pine Barrens
Fruit-dove, Mariana. See Dove, Mariana fruit
Galli-columba x. xanthonura. See Dove, white-throated ground
Gallinula chloropus guami. See Gallinule, Mariana
Gallinule, Mariana: in critical danger on Guam, Jan, 6; proposed E, Dec, 8
Gallotia simonyi. See Lizard, Hierro giant
Gardenia brighamii, updated assessment, photo, Dec, 6
Gecko, Serpent Island, proposed listing Feb, 1, 3
Gila bicolor mohavensis. See Chub, Mohave tui
Gila boraxobius. See Chub, Borax Lake
Gila cypha. See Chub, humpback
Gila elegans. See Chub, bonytail
Gila nigrescens. See Chub, Chihuahua
Gila purpurea. See Chub, Yaqui
Ginseng, American. See Panax quinquefolius
Goose, Aleutian Canada: record high winter count, recovery team recommendations, Jan, 5; captive propagation finished, Apr, 5; earliest Adak spring arrival, May, 3; scheduled research and recovery activities, Jun, 8; Aleutian Islands

recovery activities, Jul, 11, Sep, 7;
breeding loans to zoos, Nov, 11
Goose, Hawaiian, recovery plan approved,
propagation and release, Jun, 5-6
Gouania hillebrandii, proposed E, photo,
Oct, 1, 4
Grindelia fraxino-pratensis, proposed E,
Nov, 1, 8
Ground-dove, white-throated. See Dove,
white-throated ground
Groundsel, San Francisco Peaks. See Senecio
franciscanus
Grus americana. See Crane, whooping
Guam: forest birds in critical danger, survey
results, photos, Jan, 6-8; 7 birds, 2
bats proposed as E, background, Dec 1,
8-9
Guara neomexicana ssp. coloradensis, Air Force
cooperation, Dec, 5
Gumplant, Ash Meadows. See Grindelia
fraxino-pratensis
Gymnogyps californianus. See Condor, California

Halcyon c. cinnamomina. See Kingfisher,
Micronesian
Haliaeetus leucocephalus. See Eagle, bald
Hau-hele'ula. See Kokia drynarioides
Hawaii: Natural History issue on, Mar, 2;
recovery plans for 4 forest birds and
geese, photos, Jun, 4-6
Hedeoma diffusum, proposed T, drawing, Jul, 3
Heliotrope, milk-vetch. See Astragalus montii
Hemignathus wilsoni. See 'Akiapola'au
Heraclides [=Papilio] andraemon bonhotei.
See Butterfly, Bahama swallowtail
Heraclides [=Papilio] aristodemus ponceanus.
See Butterfly, Schaus swallowtail
Himantopus himantopus knudseni. See Stilt,
Hawaiian
Hipposideros ridleyi. See Bat, Singapore
roundleaf horseshoe
Honeyeater, cardinal, in critical danger on
Guam, photo, Jan, 7
Hyla andersonii. See Treefrog, Pine Barrens

Icaricia icarioides missionensis. See
Butterfly, mission blue
Iceplant. See Carpobrotus
Ictalurus pricei. See Catfish, Yaqui
Iguana species, proposed listings, Feb, 3
Import of wildlife and plants: license
requirements clarified, Feb, 5; sea turtle
ban under review, Feb, 5; of kangaroo
hides, products, Aug, 6; see also
Convention on International Trade in
Endangered Species
Incidental take: of San Bruno Mt. species,
Feb, 7; proposed rule changes, Aug, 7
Income tax check-off program in MN, Apr, 5-6
Interagency consultation, proposed revised
rules, Jul, 1, 10
Iotichthys phlegethontis. See Chub, least
Isopod, Socorro, negotiations on land, water
rights, Nov, 10
Ivesia, Ash Meadows. See Ivesia eremica
Ivesia eremica, proposed E, Nov, 8

Jatropha costaricensis, proposed E, Aug, 3

Kangaroo, eastern gray, proposed delisting,
May, 1
Kangaroo, red, proposed delisting, May, 1
Kangaroo, western gray, proposed delisting,
May, 1
Kangaroos: proposed delisting of 3 species,
photo, May, 1; imports allowed to continue,
Aug, 6

Key Largo, emergency E for rat, mouse,
Oct, 1, 4
Kingfisher, Micronesian: Guam subspecies
in critical danger, photo, Jan, 7-8;
proposed E, Dec, 8
Kinosternon flavescens spooneri. See Turtle,
Illinois mud
Kite, Everglade, recovery plan approved, snail
management, Aug, 11
Kokia drynarioides, proposed E, photo, Oct, 4

Ladies' tresses, Navasota. See Spiranthes
parksii
Lanius ludovicianus mearnsi. See Shrike,
San Clemente Island loggerhead
Leiopisma telfairii. See Skink, Round Island
Lepidochelys kempi. See Turtle, Kemp's ridley
sea
Lepidomeda mollispinis pratensis. See
Spinedace, Big Spring
Lissemys punctata punctata. See Turtle, Indian
flap-shelled
Listing of species: findings on substantiality
of petitions, Mar, 3, Jul, 4; draft
guidelines on proposed priorities, May,
4, 7; proposed procedural changes, Sep,
1, 8; final guidelines on priorities,
Oct, 6
Lizard, Coachella Valley fringe-toed, habitat
mapping Aug, 8
Lizard, Gray's monitor, status review, Feb, 3
Lizard, Hierro giant: probably extinct, Feb,
3; survives, proposed listing, Oct, 3
Lizard, Ibiza wall, proposed listing, Oct, 3
Loggerhead, reticulate, status review, Dec, 11
Loons, MN nesting protection, Apr, 6
Lousewort, Furbish. See Pedicularis furbishiae
Loxops coccineus coccineus. See 'Akepa, Hawai'i
Loxops maculatus mana. See Creeper, Hawai'i
Lupinus aridorum, additional data sought, photo,
Dec, 7
Lycaon pictus. See Oog, African wild
Lynx rufus. See Bobcat

Macaw, caninde, CITES proposal, Jan, 3
Macaw, red-fronted, CITES proposal, Jan, 3
Macroderma gigas. See Bat, ghost
Macropus fuliginosus. See Kangaroo, western
gray
Macropus giganteus. See Kangaroo, eastern
gray
Macropus rufus. See Kangaroo, red
Madtom, smoky, proposed E, Dec, 3-4
Mahonia, Truckee. See Berberis sonnei
Maine, plans abandoned for oil refinery, marine
terminal, Aug, 9
Mammals: proposed E listing for 12 foreign,
Apr, 1, 4; emergency E for 2 from FL keys,
photo, Oct, 1, 4; see also Vertebrates
Manis species, CITES proposals, Jan, 3
Mariana Islands, 9 species proposed as E, Dec,
1, 8-9
Marine species, NMFS begins 5-year review of
19, Mar, 3
Mariposa, Shirley Meadows. See Calochortus
coeruleus var. westonii
Marmoset, buff-headed, proposed E, Apr, 1
Marmot, Vancouver Island, proposed E, Apr, 1
Marmota vancouverensis. See Marmot, Vancouver
Island
Marshallia grandiflora, additional data sought,
photo, Dec, 7
Melospiza melodia graminea. See Sparrow,
Santa Barbara song
Mentzelia leucophylla, proposed E, Nov, 8
Microtus californicus scirpensis. See Vole,
Amargosa
Microtus ochrogaster ludovicianus. See Vole,
Louisiana prairie
Milk-vetch, Ash Meadows. See Astragalus phoenix
Milk-vetch, Beatley. See Astragalus beatleyae

Minnesota, nongame checkoff funding, wildlife and information/education projects, photos, Apr, 5-6

Mirabilis macfarlanei: aerial survey, insect damage, Jul, 2; insect damage, Nov, 2, 10

Moapa coriacea. See Dace, Moapa

Monachus schauinslandi. See Seal, Hawaiian monk

Monk seal. See Seal, Hawaiian monk

Monroe saxatilis. See Bass, striped

Mouse, Key Largo cotton, emergency E, photo, Oct, 1, 4

Mussel, Sampson's pearly, proposed delisting, believed extinct, Aug, 6

Mustard, slender-petaled. See Thelypodium stenopetalum

Mustela nigripes. See Ferret, black-footed

Mycteria americana. See Stork, wood

Myiagra freycineti. See Broadbill, Guam

Myotis sodalis. See Bat, Indiana

Myzomela cardinalis saffordi. See Honeyeater, cardinal

National Marine Fisheries Service: striped bass status review, Feb, 4; 5-year review of 19 marine species, Mar, 3; publishes petition findings, Jul, 5

Natural History, issue on Hawaii, Mar, 2

Naucorid, Ash Meadows, proposed E, Nov, 8-9

Nene. See Goose, Hawaiian

Neotoma floridana smalli. See Woodrat, Key Largo

Niterwort, Amargosa. See Nitrophila mohavensis

Nitrophila mohavensis, proposed E, photo, Nov, 8-9

Notropis formosus. See Shiner, beautiful

Noturus baileyi. See Madtom, smoky

Ocelot: TX radio-collaring status survey, Aug, 9; female kitten radio-collared, Sep, 6; 3-rd year study funding, Nov, 10

Odocoileus virginianus leucurus. See Deer, Columbian white-tailed

Oenothera avita ssp. eurekensis, Eureka Valley Dunes recovery plan, background, photo, Mar, 10-11

ORVs, habitat destruction by, Nov, 6-7

Otter, southern sea: acoustical observations, Jun, 2; 2 killed by humans, Oct, 2

'O'u, recovery plan approved, illustration, Jun, 4

Owl, great horned, at eagle hacking sites, Apr, 7

Paintbrush, Indian. See Castilleja salsuginosa

Palaemonias ganteri. See Shrimp, Kentucky cave

Panax quinquefolius: data sought, Jul, 5; proposed export rule, State conservation laws at issue, Oct, 5, 8; final export rule, Nov, 11

Panda, giant, proposed E, photo, Apr, 1

Pangolin species, CITES proposals, Jan, 3

Panicgrass, Carter's. See Panicum carteri

Panicum carteri, E listing, Nov, 7

Paronychia argyrocoma var. albimontana, listing proposal withdrawn, Nov, 8

Peccary, collared, CITES proposal, Jan, 3

Peccary, white-lipped, CITES proposal, Jan, 3

Pedicularis furbishiae, additional populations established, Aug, 9

Pelecanus occidentalis. See Pelican, brown

Pelecanus occidentalis californicus. See Pelican, California brown

Pelican, brown, proposed delisting of southeastern population, Dec, 10

Pelican, California brown: recovery plan approved, background, photo, Jul, 6-8; first AL nesting record, Oct, 7

Pennyroyal, Flagstaff. See Hedeoma diffusum

Penstemon grahamii, updated assessment, photo, Dec, 6

Percina antesella. See Darter, amber

Percina tanasi. See Darter, snail

Peromyscus gossypinus allapaticola. See Mouse, Key Largo cotton

Petitions, findings on substantiality of, Mar, 3, Jul, 4

Phlox, long-haired. See Phlox pilosa var. longipilosa

Phlox pilosa var. longipilosa, proposed T, photo, Sep, 1, 5

Phocoena sinus. See Porpoise, Gulf of California harbor

Pike, blue, removed from list, extinct, Oct, 3

Pipilo fuscus eremophilus. See Towhee, Inyo brown

Pitcher plant, green. See Sarracenia oreophila

Pittston Co., abandons planned ME refinery, Aug, 9

Plants: U.S. proposed CITES amendments on 24 species, Jan, 8; designated ports of entry for, Mar, 3; 7 proposed as E, backgrounds, photo, Aug, 1, 3-4, 8; taking regulations, Aug, 7; proposed E for 3, photos, drawing, Oct, 1, 4-5; 7 Ash Meadows species proposed for listing, photos, Nov, 1, 8-10; updated assessment of vulnerability, revised categories, photos of examples, Dec, 1, 6-8

Platanista indi. See Dolphin, Indus River

Platte River Study report, Nov, 11

Platysternon megacephalum. See Turtle, Chinese big headed

Plecotus townsendii ingens. See Bat, Ozark big-eared

Plover, piping, MN projects, Apr, 5

Podarcis pityusensis. See Lizard, Ibiza wall

Pomacea paludosa. See Kite, Everglade

Porpoise, Gulf of California harbor, status review, Jul, 4

Ports of entry for plants, designation of, Mar, 3

Prairie dog, Utah, proposed reclassification from E to T, overpopulation, Jun, 3, 8

Prairie dog, white-tailed, association with ferret, Mar, 5-8

Priorities for listing and recovery: draft guidelines on, May, 4, 7; final guidelines, Oct, 6-7

Pronghorn, Sonoran: recovery plan approved, Feb, 6-7; studies initiated, Sep, 6; 10 radio-collared, Dec, 2

Pseudemys rubriventris bangsi. See Turtle, Plymouth red-bellied

Psittirostra psittacea. See 'O'u

Pteropus mariannus mariannus. See Bat, Mariana fruit

Pteropus rodricensis. See Bat, Rodriguez flying fox fruit

Pteropus tokudae. See Bat, little Mariana fruit

Ptilinopus roseicappilla. See Dove, Mariana fruit

Ptychocheilus lucius. See Squawfish, Colorado

Puffinus auricularis newellii. See Shearwater, Newell's Townsend

Pupfish, Ash Meadows Amargosa: temporary protection extended, Jan, 4; comment period reopened, May, 5, 8; final E, Sep, 3; population estimate, Sep, 6

"Quemador del Pacifico." See Jatropha costaricensis

- Radio telemetry, new type battery, condor use, Jan, 3
- Rail, Guam: in critical danger, photo, Jan, 6; proposed E, Dec, 8
- Rail, light-footed clapper, CA count, Apr, 2
- Rail, Yuma clapper: recovery plan approved, photo, Jul, 7; flooding damage, Jul, 9
- Rallus longirostris levipes. See Rail, Tight-footed clapper
- Rallus longirostris yumanensis. See Rail, Yuma clapper
- Rallus owstoni. See Rail, Guam
- Ranched specimens, CITES proposals on trade in, Apr, 3, 8
- Rangifer tarandus caribou. See Caribou, woodland
- Raptors: exemption documentation requirements, Feb, 3; powerline electrocution, Mar, 8-9; exemption of captive-bred, Aug, 6
- Rat, Fresno kangaroo, proposed E, Dec, 5
- Rat, Morro Bay kangaroo: recovery plan, background, habitat preservation, photo, Jan, 11; 3-year program to stop decline, Mar, 2, 8; habitat restoration, Apr, 2; vegetation management, Jun, 2
- Rattlesnake, Aruba Island: proposed listing, Feb, 3; T listing, photo, Jul, 1, 8
- Recovery priorities: proposed, 18 categories listed, May, 4, 7; final guidelines on, recovery- potential criteria, Oct, 6-7
- Reptiles: proposed E or T for 17 species of foreign, Feb, 1, 3; 17 species listed, photo, Jul, 1, 8; proposed listing for 2 foreign, 1 delisting, Oct, 3, 8
- Review, 5-year comment period extended, Mar, 3
- Rhinichthys osculus nevadensis. See Dace, Ash Meadows speckled
- Rhipidura rufifrons uraniae. See Fantail, rufous-fronted
- Rio Yaqui basin, proposed listing for 3 fishes, photo, Aug, 1, 5
- Rostrhamus sociabilis plumbeus. See Kite, Everglade
- Sagebrush, Laramie false. See Sphaeromeria simplex
- Salamander, desert slender, recovery plan signed, background, habitat conservation, photo, Jan, 9, 10
- Salmo clarki henshawi. See Trout, Lahontan cutthroat
- Salmo clarki stomias. See Trout, greenback cutthroat
- Salmo gilae. See Trout, Gila
- San Bruno Mountain species, incidental take, Feb, 7
- Sarracenia oreophila, habitat description notice, litigation, Sep, 4, 8
- Sculpin, pygmy, disaster averted after dam blowout, Mar, 9
- Seal, Hawaiian monk, record number observed, Mar, 2
- Senecio franciscanus: comment period reopened, Apr, 4, 6; T listing, Dec, 3
- Shearwater, Newell's Townsend (manx), streetlight shades to decrease fallout, Nov, 2
- Shiner, beautiful, proposed T, Aug, 1, 5
- Shrike, San Clemente Island loggerhead, to be studied, Nov, 2
- Shrimp, Kentucky cave: hearing on proposed E, Jun, 3; E listing, background, photo, Nov, 1, 4
- Sialia sialis. See Bluebird, Eastern
- Sidalcea pedata, proposed E, Aug, 3-4
- Silverling. See Paronychia argyrocoma var. albimontana
- Silversword, Maui. See Argyroxiphium sandwicense
- Similarity of Appearance, alligator status, Nov, 5
- Skink, five-lined, MN research project, drawing, Apr, 5
- Skink, Round Island, proposed listing, Feb, 3
- Snail, apple, management for Everglade kite, Aug, 11
- Snail, Iowa Pleistocene, IL population, Jul, 9
- Snake, brown tree (Philippine rat), bird predation on Guam, Dec, 8-9
- Snake, San Francisco garter, incidental take, Feb, 7
- Snowbells, Texas. See Styrax texana
- Sparrow, dusky seaside, cross-breeding, failures, photo, Dec, 11-12
- Sparrow, Santa Barbara song, removed from list, extinct, Nov, 8
- Species. See Endangered or Threatened species
- Speyeria zerene hippolyta. See Butterfly, Oregon silverspot
- Sphaeromeria simplex, protection by private company, Mar, 9
- Spinedace, Big Spring, proposed T, habitat photo, Dec, 3-4
- Spiranthes parksii: habitat protection, Jun, 2; jeopardy from highway expansion, Aug, 8-9
- Squawfish, Colorado: lawsuit appeal, Jan, 5; first annual report of monitoring program, Mar, 9; Windy Gap Study objectives, radio-telemetry results, Apr, 7-8; reservoir spilling benefits, Aug, 8; final report on radio-telemetry results, Aug, 9
- Starling, Micronesian, in critical danger on Guam, Jan, 7
- State nongame programs, MN funded by tax checkoff, photos, projects, Apr, 5-6
- Status reviews, findings on substantiality of, Mar, 3
- Sterna albifrons browni. See Tern, California Least
- Stilt, Hawaiian, recruitment count, Nov, 2
- Stizostedion vitreum glaucum. See Pike, blue
- Stork, wood: proposed E, population decline, habitat, photo, Mar, 1, 8; FL and GA nesting census, Jul, 9
- Styrax texana, proposed E, drawing, Oct, 5
- Substantiality of information, for petitions and status reviews, Mar, 3
- Sucker, June, status report, Jan, 5
- Sucker, razorback: Dexter spawning, Mar, 9; restocking program, Apr, 7, Oct, 7
- Sucker, Webbug, status report, Jan, 5
- Sunfish, spring pygmy, Conservation Agreement signed, Jul, 10
- Sunray, Ash Meadows. See Enceliopsis nudicaulis
- Swallenia alexandrae, and Eureka Valley dunes recovery plan, background, photo, Mar, 10-11
- Swan, trumpeter, MN research projects, chick reintroduction, Apr, 5, 6
- Swiftlet, Vanikoro: in critical danger on Guam, Jan, 6-7; proposed E, Dec, 8
- Taking regulations, proposed changes, Aug, 7
- Tayassu pecari. See Peccary, white-lipped
- Tayassu tajacu. See Peccary, collared
- Tern, California Least: nesting reports, Apr, 2, Jul, 2; NASA Island activities, Aug, 2, Sep, 2, Oct, 7
- Thamnophis sirtalis tetrataenia. See Snake, San Francisco garter
- Thermosphaeroma thermophilus. See Isopod, Socorro
- Threatened species. See Endangered or Threatened species
- Toad, Wyoming: proposed E, no known population, photo, Feb, 1, 4; 2 juveniles found, Jul, 9
- Torreya, Florida. See Torreya taxifolia

Torrey taxifolia, proposed E, background, photo, May, 5
 Towhee, Inyo brown, conservation meeting, Aug, 2
 Treefrog, Pine Barrens, FL population removed from list, Dec, 9-10
Trionyx ater. See Turtle, black softshell
Trout, Gila, Little Creek stocking, Jan, 2, 5
Trout, greenback cutthroat, stocking-out, Oct, 7
Trout, Lahontan cutthroat: water-use conflicts, recovery and management plans, Apr, 7; Pyramid Lake ladder problems, Sep, 2, 6; instream flow studies, Nov, 2
 Truckee-Carson water-use conflicts, Apr, 2, 7, Nov, 2
 Trumpet, flaming. See Collomia rawsoniana
Turtle, Asiatic box, status review, Feb, 3
Turtle, black softshell, CITES proposal, Jan, 8
Turtle, Central American river, proposed E, Feb, 3
Turtle, Chinese bigheaded, status review, Feb, 3
Turtle, green sea: first recorded O'ahu nesting, Jan, 2; review of import ban, Feb, 5; CITES proposed trade in ranched specimens, Apr, 8; review of subsistence take, May, 7; proposal on transshipment of products, Jun, 3
Turtle, Illinois mud, Conservation Agreement, Mar, 9
Turtle, Indian flap-shelled, proposed delisting, Oct, 3
Turtle, Kemp's ridley sea: nesting season activities planned Feb, 2; imprinting and head-starting projects, May, 2; Mexican eggs and hatchlings transplanted, tar threat, Jul, 9
Turtle, Plymouth red-bellied, Critical Habitat purchased, Oct, 7

Uma inornata. See Lizard, Coachella Valley fringe-toed
Ursus arctos horribilis. See Bear, grizzly

Varanus grayi. See Lizard, Gray's monitor
 Vertebrates, 363 candidate species listed, Jan, 5
Viper, Lar Valley, proposed E, Feb, 3
Vipera latifii. See Viper, Lar Valley
Vole, Amargosa, proposed T, Sep, 3
Vole, Louisiana prairie, apparently extinct, Jul, 10
Vulpes macrotis mutica. See Fox, San Joaquin kit
Vultur gryphus. See Condor, Andean

 Warbler, Kirtland's, jack pine plantings for, census, Jul, 9
 Water use, Truckee-Carson ongoing conflicts, Apr, 2, 7, Nov, 2
 White-eye, bridled: in critical danger on Guam, Jan, 7; proposed E, Dec, 8
 Wild-buckwheat, clay-loving. See Eriogonum pelinophilum
 Windy Gap Fishes Study, Apr, 7-8
Wolf, gray (Eastern timber): MN management efforts, Apr, 6; public attitudes on, radio collaring, Jul, 9; MN management regulations amended, permit controlled taking, litigation continues, Sep, 5
Wolf, Mexican: recovery plan, background, captive-breeding program, photo, Jan, 10-11; first litter of second generation born-in-captivity, May, 2; 13 pups produced, Jun, 2
Wolf, red: pair to TX zoo, Apr, 7; first litter born in public display facility, May, 2
 Woodrat, Key Largo, emergency E, Oct, 1, 4

Xyrauchen texanus. See Sucker, razorback

Yacare, CITES proposal, Jan, 3, 8

Zosterops c. conspicillata. See White-eye, bridled

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Review Initiated for Species Listed in 1978

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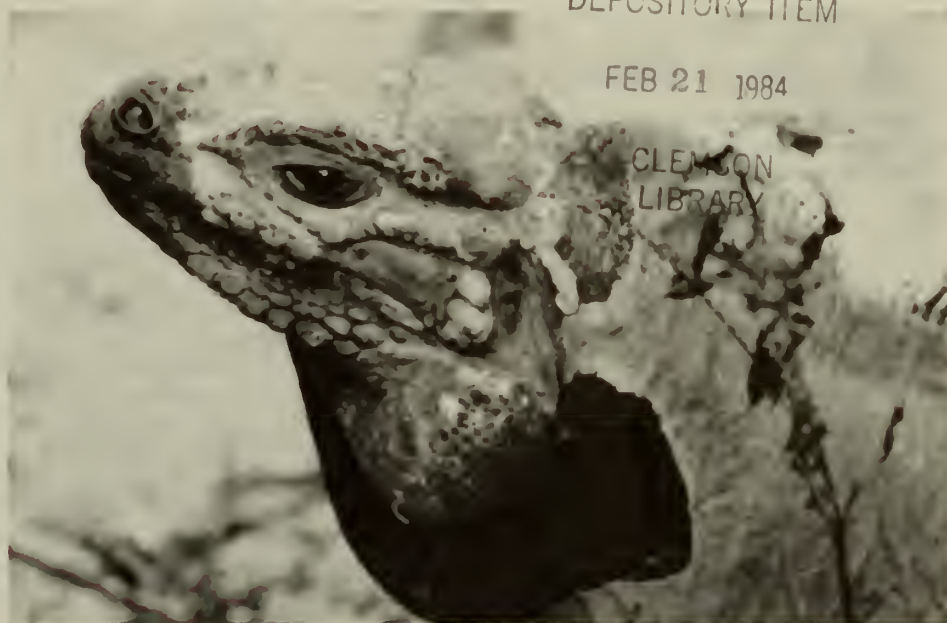


Photo by C. Kenneth Dodd, Jr.

The Mona ground iguana (*Cyclura stejnegeri*) and Texas wild-rice (*Zizania texana*) are among the 21 animals and 18 plants whose listed status is now under review.

mussel. A brief summary of each plan follows:

The Chittenango ovate amber snail (*Succinea chittenangoensis*) is a terrestrial mollusk known only from the immediate vicinity of Chittenango Falls in New York State. Its common name refers to its habitat and to its ovate, amber colored shell. *S. chittenangoensis* prefers cool, sunlit areas of lush herbaceous growth within the saturated spray zone of the falls, but it is found also in vegetation occurring in a nearby spring-fed area. As a Pleistocene relict, *S. chittenangoensis* is able to survive within its restricted range at the falls because the paraglacial habitat has characteristics that mimic the cool, moist conditions existing thousands of years ago when the snail was more widespread. It is particularly vulnerable to even subtle modifications in its environment, whether natural or human-related.

S. chittenangoensis was said to be "in great abundance" in 1905 when it was first collected. Although recent surveys have not yielded a firm population estimate, it has apparently experienced a significant decline within its restricted habitat. In 1977, the New York Department of Environmental Conservation reported that the species was "rare" and "in need of protection." *continued on page 8*



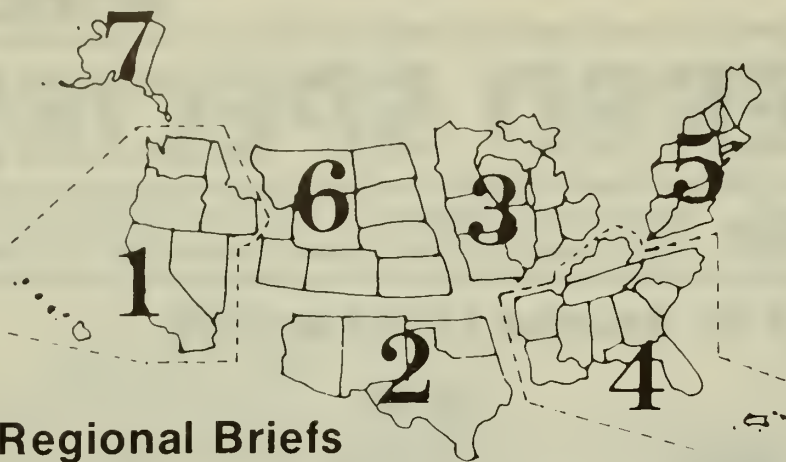
Adult specimens of the Chittenango ovate amber snail have shells that are gently convex, laterally compressed, and about 21 mm in length.

Photo by Patricia Rexinger



Recovery Plans Approved for Five Mollusks

Although mollusks are not the most famous examples of rare wildlife, there are 34 snails and clams on the U.S. List of Endangered and Threatened Species, and many more are candidates for future listing. Among the recovery plans that have been approved during 1983 for listed species are five new plans for mollusks—four snails and one clam or



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of December:

Region 1—Biologists at San Francisco Bay National Wildlife Refuge, in cooperation with the San Francisco Bay Bird Observatory, have initiated a long-term color banding study of the California clapper rail (*Rallus longirostris*

obsoletus) in San Francisco Bay. The objectives of this study are to determine to what extent rails move between various marshes around the bay and to better define population trends of this subspecies. Clapper rails are being captured from airboats with long-handled nets during daytime high tides. Once captured, each rail is fitted with a unique

combination of color bands and a variety of physical measurements are taken. A total of 95 individuals have been captured in 5 days afield from a total estimated population of 4,000-6,000.

A peregrine falcon (*Falco peregrinus*) which landed on a fishing boat 1,000 miles southeast of Hawai'i recently had apparently been blown out to sea by a storm. It was cared for at the Honolulu Zoo and subsequently shipped to California for release by a member of the Peregrine Falcon Recovery Team.

National fish and wildlife refuge staff members participated in regulated AMTRACK (armored mechanized troop carrier) maneuvers at Kaneohe Marine Corps Air Station, O'ahu, Hawai'i, on November 7, 1983. The purpose of the exercise was to improve nesting habitat for Hawaiian stilts (*Himantopus himantopus knudseni*) in the Nuupia ponds complex. Four AMTRACKS were used to open dense vegetation and get water to nesting areas.

A subject of an investigation that originated in San Francisco regarding the take of an Endangered San Francisco garter snake has agreed to pay fines totalling \$2,000.

Last October, a cooperative 3-year life history study of the Moapa dace (*Moapa coriacea*) was initiated with the Seattle Research Laboratory. Research efforts are aimed at providing essential information for carrying out the Moapa Dace Recovery Plan. This month, we established a field station at the Moapa National Wildlife Refuge in southern Nevada and completed a detailed study plan. We will compare the aquatic habitat that supports few dace to that habitat which supports a higher number. Our objective is to determine the environmental conditions that may restrict Moapa dace proliferation on the refuge.

Region 2—On July 15, 1983, Region 2 issued a jeopardy biological opinion to the Federal Highway Administration regarding the impacts of the State highway expansion project in Brazos County, Texas, on an Endangered orchid, the Navasota ladies'-tresses (*Spiranthes parksii*). The findings of that opinion were that the proposed expansion would add to the already perilous conditions faced by the plant. At that time, only about 150 individuals were known, all in areas threatened by various types of development. Last autumn, the Service contracted with Dr. Hugh Wilson, of Texas A & M University, to conduct a new survey for the species, and personnel from the Texas Department of Highways participated. The surveys resulted in the discovery of a new large population and several smaller

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populations within a 20-mile radius of the original population.

Based on these findings, the Service reevaluated the jeopardy opinion. The new data indicate that the species is more abundant and widely distributed than previously known. Increased abundance does not itself reduce the threat to the species, but it does indicate that additional genetic material is available to the population, and it implies that the species may be more successful in existing habitats than earlier believed. A more widespread distribution indicates a more tolerant species, allows additional options for habitat protection, and reduces the chances of a single catastrophic event eliminating the species. Because of the new data, on September 9, 1983, Region 2 issued a new opinion stating that the proposed action is not likely to jeopardize the survival of the species.

The Attwater's Greater Prairie Chicken Recovery Plan has been approved by the Regional Director. Recovery tasks are directed toward implementing intensive management of coastal prairie habitat for this prairie chicken (*Tympanuchus cupido attwateri*). Habitat loss continues to be the main threat.

The highest whooping crane (*Grus americana*) count for the current wintering populations in Texas and New Mexico are 75 and 27, respectively. This represents an increase of 2 whoopers for the Wood Buffalo/Aransas population and 13 for the Grays Lake/Bosque del Apache flock over the high count in the winter of 1982/83. (Another 37 whoopers are in captivity, most of them comprising the Service's Patuxent Wildlife Research Center captive propagation flock.)

It appears that one of the wild female ocelots (*Felis pardalis*) being radio-tracked on Laguna Atascosa National Wildlife Refuge may have produced young in early November 1983. If so, this would be her third litter in 13 months. Ocelot #30 (the number of her radio collar) was first captured and radio-collared on October 1, 1982, and was observed to be nursing at the time. The fact that she was caring for young was confirmed when her female kitten was captured 16 days later. Female #30 has been recaptured a number of times and was observed to be nursing again in early June 1983; however, the presence of a kitten was never confirmed. Recaptures in November 1983 showed her to be nursing for yet a third time.

The ongoing endangered feline study on Laguna Atascosa NWR resulted in the capture of another female ocelot on December 11, 1983, bringing the total number of ocelots being radio-tracked on the refuge to three males and five

females. Two additional males have been captured on private lands. As yet, the study has not been able to confirm the presence of jaguarundi (*Felis yagouaroundi cacomitli*) in the area. Innovative means of locating and confirming the presence of jaguarundi are being explored.

Region 3—Regional endangered species staff members met recently with representatives of Minnesota, Wisconsin, Iowa, and the University of Minnesota's raptor rehabilitation project to discuss next year's releases of peregrine falcons. This will be the third year of the peregrine release program in Region 3.

Region 4—Personnel of the Jackson Endangered Species Field Office observed the Alabama cavefish (*Speoplatyrhinus poulsoni*) in a cave in northwestern Alabama on October 26 and November 17, 1983. This species, which had not been sighted since 1970, is the sole representative of its genus and is known from only the one cave. Prior to the recent sightings, concern was developing that chemical pollution of ground water due to spraying of pesticides on cotton fields overlying the cave may have led to the extinction of the species. On the November 17 visit, 10 individuals were observed, but no specimens were collected. No more than four individuals had previously been sighted at any one time.

A Jacksonville Endangered Species Field Office representative attended a symposium on the management of *Torreya taxifolia* (Florida torreya) on November 29. The symposium was sponsored by Florida's Department of Natural Resources (Division of Recreation and Parks). Topics discussed included the plant's current status, propagation techniques, techniques for disease control, Federal protection under the Endangered Species Act, and management procedures.

On November 20, 1983, a manatee (*Trichechus manatus*) was born at the Miami Seaquarium. The male calf was born after 44 hours of labor in the breech position. (In aquatic mammals, the tail normally appears first.) It is the fourth time that this particular manatee, Juliette, has given birth in captivity. The calf weighed in at 75 pounds and was 4 feet, 3½ inches long. There are three other lactating female manatees at the Seaquarium with older calves, and they act as nursemaids to the newest addition.

Region 5—The Chesapeake Bay Bald Eagle Recovery Team met recently in Wakefield, Virginia. Among the topics discussed were: the current status of Caledon State Park (Virginia) and its beneficial effects on the bald eagle; the 1983-1984 eagle survey and banding work; the 5-year review on the status of

New Contractor for Fish and Wildlife Reference Service

The Fish and Wildlife Reference Service (FWRS), a private entity that disseminates publications for a number of U.S. Fish and Wildlife Service programs under government contract, is now being operated by a new contractor, Informatics General Corporation. New orders should be addressed to the Fish and Wildlife Reference Service, 1776 E. Jefferson Street, 4th Floor, Rockville, Maryland 20852, or call collect at 301/468-1737. Information on which documents are available and on fees will be included in a quarterly FWRS newsletter, which will be sent free to those requesting it. Orders placed with the previous contractor will be forwarded to the new contractor.

The FWRS information retrieval system selectively covers the published and unpublished research reports resulting from the Endangered Species Program (including recovery plans), Cooperative Fish and Wildlife Research Units, Federal Aid in Fish and Wildlife Restoration Program (Pittman-Robertson and Dingell-Johnson Acts), and Anadromous Sport Fishing Conservation Program.

the bald eagle; and the possibility of using some eagles from the Maryland or Virginia populations for translocating to parts of the country where this Endangered bird is rarer (if not extirpated).

Region 6—The Interagency Grizzly Bear Committee (IGBC) held its third meeting on November 8-9, 1983, in Denver. Major topics of discussion included further research needs, reports from the management subcommittees, and briefings from the U.S. Forest Service on management activities currently underway. A final report of the Grizzly Bear Investigation Team was also provided to the IGBC. This team was formed by the Forest Service to investigate the fatal grizzly (*Ursus arctos horribilis*) attack that occurred last June in the Gallatin National Forest.

On December 5, 1983, the ad hoc Committee to Investigate the Need and Feasibility of the Supplemental Feeding of Yellowstone Grizzly Bears completed its final report. This report will be a topic

continued on page 7

Tax Check-off Funds Massachusetts Non-game and Endangered Species Program

by **Bradford G. Blodget,**
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The Massachusetts Nongame and Endangered Species Program began in 1977; later, in 1979, the Massachusetts Division of Fisheries and Wildlife signed a Section 6 Cooperative Agreement with the U.S. Fish and Wildlife Service. The program is organized into three major parts: (1) Administration and Coordination, (2) Research and Management, and (3) Information and Education. Part 1 covers species reporting and documentation, permitting operations, monitoring of significant legislation, maintenance of listings on endangered, threatened, and other species for special consideration, and commenting on Federal rulemakings. Part 2 includes studies on recovery of endangered species, bald eagle restoration, Plymouth red-bellied turtle research, and status investigations of State-listed species. Preparation of articles, news, releases, and a slide presentation covering the program are included in Part 3.

In July 1983, the Massachusetts Natural Heritage Program, which had been operated since 1978 by The Nature Conservancy under contract to the Massachusetts Department of Environmental Management, was transferred into the Division. The Natural Heritage Program has developed an inventory and data storage system for records of uncommon and rare wildlife and wild plants in Massachusetts. In addition, the program services other agencies, private organizations, and citizens requesting technical assistance in environmental impact studies, assists in the planning stages of greenbelts and parks, and helps develop land management plans. The Natural Heritage Program is a logical extension of our own program, and will now be operated as a unit within it.

The long-term funding outlook for the Massachusetts Nongame and Endangered Species Program brightened on July 26, 1983, when Governor Michael Dukakis signed a law to set up a nongame wildlife income-tax checkoff system. It has been estimated that annual revenues from the checkoff will be about one-half million dollars. The priorities for funding will include bald eagle and Plymouth red-bellied turtle restoration studies, expanded status investigations on State-listed species, addition of a tern management program, and land acquisition.



Plymouth red-bellied turtle (left) sunning with eastern painted turtle

Listings

In November 1978, a special advisory listing entitled "Nongame Wildlife for Special Consideration in Massachusetts" was published, primarily to serve as a guideline for identifying species thought to warrant special consideration. In addition, it serves as a reference list for other State and Federal agencies, conservation groups, planners, developers, and the general public. The list, which underwent substantial revision in 1983, contains 91 species broken down as endangered (16), threatened (3), State rare (23), State local (39) and peripheral (15). Massachusetts adopts the Federal definitions for the first two terms, but reserves the right to also list additional species occurring in the Commonwealth of Massachusetts that we believe may properly meet the Federal definitions. The terms "State rare," "State local," and "peripheral" include species that do not appear to meet the Federal definition, but happen to be reduced or declining within the Commonwealth.

Among the endangered and threatened species listed by the State are the shortnose sturgeon (not included in our project agreement), three marine tur-

tles, Plymouth red-bellied turtle, bald eagle, peregrine falcon, Eskimo curlew (possibly extinct, but once a regular migrant in Massachusetts), Indiana bat, six cetaceans, and the small-whorled pogonia. Threatened species include two marine turtles and the silverling. A companion listing, "Native Wild Plants for Special Consideration," was published in 1983. The Natural Heritage Program staff of five includes a botanist who worked with many groups since 1978 in the preparation of this list. Over 200 native plant species thought to be rare and/or severely declining in the Commonwealth are listed for advisory purposes.

Plymouth Red-bellied Turtle

Investigations into the distribution and the life history of the endemic Plymouth red-bellied turtle (*Pseudemys rubriventris bangsi*) have been conducted under contract since 1979. To date, 64 ponds have been checked for the presence of this chelonian with 15, all in Plymouth County, found to contain the species.

The total current population of the Plymouth red-bellied turtle is not believed to exceed 250 animals. From 1979

Photo by Bill Byrne Massachusetts Division of Fisheries and Wildlife

to 1982, 202 specimens were marked by marginal notching of the shields and, more recently, by yellow disc tags. The largest population in any pond contains about 135 animals with a sex ratio skewed 2:1 in favor of females. Only 40 percent of the females appear to produce eggs in a given year, and the clutch sizes ranged from 10 to 18. The fertility rate is about 83 percent, and about 87 percent of those eggs have been hatching. Most nests are in sandy areas within 200 feet of a pond, often in or along a road. Predation at known nests appears to be a factor, with fox and raccoon implicated as major predators. Recently, a bullfrog was found that had eaten two young turtles approximately 30 mm in width. The turtle's diet, on the other hand, consists of plant material with the aquatic *Myriophyllum* most frequently encountered.

A fifth year of basic data collection is planned, to be followed by implementation of management efforts, which may include land acquisition, predator control, public education, translocations, and artificial creation and management of nesting substrate. Also possible are more manipulative techniques of producing eggs, along with the trapping and moving of gravid females to penned laying areas. Nests may then be protected by predator exclosures. Eggs may be collected for laboratory hatching and overwintering for the purpose of "headstarting."

Bald Eagle

The Nongame and Endangered Species Program has coordinated the annual Massachusetts midwinter bald eagle (*Haliaeetus leucocephalus*) survey since 1977, with statewide totals since 1977 of 13, 15, 7, 26, 19, 13, and 23 recorded. Most wintering eagles in Massachusetts are concentrated about the 25,000-acre Quabbin Reservoir in west-central Massachusetts.

Formal plans for hacking bald eagles were developed in late 1980 with cooperation from the New York Department of Environmental Conservation, but implementation of the project was delayed until 1982. In June 1982, two eaglets were secured from Michigan, with the assistance of the Michigan Department of Natural Resources, and were flown to the hack site. These birds fledged in late July 1982. In 1983, following complex negotiations with the States of New Jersey and Pennsylvania, the Manitoba Department of Natural Resources (Canada), the Canadian Wildlife Service, and the U.S. Fish and Wildlife Service (FWS), four eaglets were gathered in Manitoba and raised at the Quabbin Reservoir hack site. Funding for this project is partially provided by a grant from the Bank of Boston and the Massachusetts Audubon Society, and grant money is held by the Commonwealth of Massachusetts in a special trust. The hack site attendant is a



Photo by Jack Swedberg
Massachusetts Division of Fisheries and Wildlife

Collecting bald eaglets in Manitoba, Canada, for release in Massachusetts



Photo by Bill Byrne
Massachusetts Division of Fisheries and Wildlife

Twelve week old bald eaglets exercising at Quabbin Reservoir hacking site

graduate student from the University of Massachusetts Cooperative Wildlife Research Unit.

Immediate plans call for the continued hacking of eaglets annually through 1986. The current capacity of six birds per year has never been attained due to the difficulty in securing an adequate supply of birds. It is hoped that with increasing production of bald eagle eggs at the FWS Patuxent Wildlife Research Center in Laurel, Maryland, we will eventually handle six or more birds per year.

Special Species Investigations

Bats—A literature survey on the Indiana bat (*Myotis sodalis*) in Massachusetts yielded 10 references. The major reported hibernaculum in Massachusetts was a complex of abandoned emery mines in Chester, Hampshire County, where a maximum of 60 bats was recorded during a visit in 1936. The Division obtained this property in 1974 as a gift, and has established restrictions on entry to the mines. In 1979-1982, late winter checks at this site resulted in an average capture of 177 bats of four species, and two summer checks averaged 422 bats of three species. The most frequent species has been the little brown bat (*Myotis lucifugus*). Investigations to



Adult great blue herons, a species of State interest

date have not revealed any Indiana bats. Small numbers of the small-footed bat (*Myotis leibii leibii*), listed as "State rare" for advisory purposes, have been encountered.

Amphibians and Reptiles—The Division is actively participating in a coordinated "Salamander Watch" for collection of data on ambystomatid salamanders. These data are being stored in the Natural Heritage Program computerized inventory system. Ongoing field investigations are also being operated in the hope of locating the bog turtle (*Clemmys muhlenbergi*), a State rare species.

Great Blue Herons—A statewide inventory of reported great blue heron (*Ardea herodias*) colonies was initiated in June 1979. During the remainder of that year, 28 active nests were confirmed at six heronries that ranged in size from one to eight nests. Known colonies and active nests have steadily increased through 1983, when 191 active nests were confirmed at 13 heronries that ranged in size from one to 40. Known production was at least 489 young, with a productivity mean of 2.9 young per nest. This startling increase seems to be accountable both to improved knowledge of remote heronries and actual growth of known heronries.

Seabirds—Annually, the Division coordinates a meeting of the Massachusetts Tern-Monitoring Network, a group of individuals and organizations bound together by their concern for colonial-nesting seabirds. Data are collected by the Nongame and Endangered Species Program on colony locations, numbers of pairs at each colony, and general information on production. Data compilation sheets are provided to all participants, who are then mailed the tabulated results. Population data are collected from the network for the common tern (*Sterna hirundo hirundo*), least tern (*Sterna albifrons*), roseate tern (*Sterna dougallii dougallii*), Arctic tern (*Sterna paradisaea*), and laughing gull (*Larus atricilla*), although only the last three are State-listed species. In 1983, data have been collected on the piping plover (*Charadrius melodus*) from the same network. Although funds are not currently available to actively manage these species, the Nongame and Endangered Species Program seeks to maintain up-to-date data for use should funding become available. Since the early 1970s, private interests have voluntarily taken it upon themselves to post tern colonies, and this involvement has been a credit to the citizens of Massachusetts as well as a great benefit to the seabirds.

The results in 1983 included 7,909 pairs of common terns, 2,112 pairs of least terns, 1,502 pairs of roseate terns, and 18 pairs of Arctic terns. Numbers of both the Arctic and roseate terns have

Photo by Bill Byrne Massachusetts Division of Fisheries and Wildlife



Least tern nesting area near Newbury, Massachusetts

pared to 14 in 1982 (human-related losses).

State and Federal biologists met on December 20, 1983, in Casper, Wyoming, to review the draft Recommended Criteria and Procedures for Black-footed Ferret Surveys, and to develop acceptable survey standards. These survey standards, when completed, will be used for Section 7 clearance of Federally authorized or funded activities that may affect black-footed ferrets (*Mustela nigripes*) or their primary habitat, prairie dog towns.

Region 7—Although the short-tailed albatross (*Diomedea albatrus*) is listed as an Endangered foreign species, it once numbered in the millions and was so abundant in Alaskan waters that it was a common food item in the diet of native Aleut Indians. Plundered by plumage hunters on Torishima, its primary breeding island off Japan, the species was nearly extinct by the time World War II began. Torishima has been declared a nature reserve and national monument by the Japanese government, and the short-tailed albatross is staging a slow comeback. Until recently, sightings in Alaskan waters of this, one of the world's rarest albatross species, have been few. This summer and fall, however, U.S. observers aboard foreign fishing vessels recorded nearly 30 observations of *D. albatrus* in the waters of the western Aleutian Islands and Gulf of Alaska. In comparison, only six observations were recorded in Alaskan waters in the preceding 6-year period (1976-1982).

Photo by Bill Byrne
Massachusetts Division of Fisheries and Wildlife

remained generally stable since 1974; however, the concentrated distribution of the roseate tern is of management concern since 90 percent of the population is concentrated at a single colony. While tern numbers have remained generally stable, the laughing gull population has increased from 140 pairs in 1974 to 930 pairs in 1983. Piping plover survey results were 70+ pairs in 1983. The actual number of pairs is probably higher since the piping plover survey was conducted incidental to the tern survey work. A significant portion of the habitat for colonial beach-nesting seabirds is in public ownership and protected in one fashion or another from development, but pollution, human disturbance, huge gull populations, and other problems are of continuing concern.

The Massachusetts Nongame and Endangered Species Program has developed slowly over the years, but appears to have a bright future role in the conservation of our rich wildlife and plant heritage. We look forward to working with the many fine private conservation organizations here in the

Commonwealth that have already established exemplary conservation records.

Regional Briefs

continued from page 3

of discussion at the special IGBC meeting scheduled for February 14, 1983.

Since July 15, 1983, 7100 hours have been expended by Federal and State law enforcement officers patrolling backcountry areas in grizzly habitat. During this time, they have contacted 1,940 backcountry users. Numerous warnings and citations have been issued for such violations as dirty camps, unattended fires, hunting in parks, and trespassing in national parks. As a result, some camps have improved and many backcountry users seem to be getting the message about how to behave in grizzly country. These law enforcement patrols, coupled with States restricting black bear seasons, better prosecutions in the courts, and increased public awareness, have begun to show some success. To date, only 6 losses have been recorded in the Yellowstone Ecosystem, com-

Culminating 3 years of correspondence and difficult telephone communications, 18 Aleutian Canada geese (*Branta canadensis leucopareia*) were shipped last month to their new homes at the Yagiyama and Tama Zoos in Japan. The Japanese hope to breed Aleutian geese in captivity and release their progeny among wild white-fronted geese that winter in the Lake Izunuma area. Aleutian Canada geese formerly wintered in Japan, but this population has recently dwindled to a single individual.

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—The Editor

Five Mullusks

continued from page 1

ment of Environmental Conservation listed *S. chittenangoensis* as an endangered species, and the U.S. Fish and Wildlife Service gave the snail Federal protection the next year when it was listed as Threatened. The three major factors implicated in the decline are degradation of water quality, direct human impacts, and biological vulnerability.

Water of good quality, free from toxicants and other pollutants, is essential to the survival of *S. chittenangoensis*. The water quality at the falls deteriorated in the late 1800s when a nearby community began to discharge raw sewage into Chittenango Creek, but it has contained fewer organic wastes since 1977, when a secondary-level sewage treatment facility became operational. Currently, the impact of chemical contaminants is of more concern. Most of Chittenango Creek's watershed is used for agriculture, and pesticides, herbicides, and fertilizers readily enter the drainage. Salt applied to nearby roads during winter months may also affect the creek's salinity.

Human activity at Chittenango Falls is another threat to the snail. Since 1928, the falls have been part of a State park, and over 125,000 people visited during 1982-1983. Fishing and hiking brings many of these visitors to the immediate vicinity of the falls, where trampling of the snail habitat (along with the snails themselves) has been identified as a major potential threat. It has been estimated that most of the vital habitat is vulnerable to disturbance by humans.

The Chittenango Ovate Amber Snail Recovery Plan (approved March 24, 1983) was developed by the New York DEC's Endangered Species Unit, which has taken the initiative for recovering this species. Ensuring the survival of a self-sustaining snail population at the falls is the plan's primary objective. However, due to the vulnerability of the snail's extremely limited and unusual habitat, the plan recommends against a complete delisting from its current Threatened status unless at least five additional, self-sustaining geographically isolated populations are discovered. While the various recovery tasks are being carried out, checks of succineid shell collections in museums and surveys of potential habitat within the Pleistocene range of *S. chittenangoensis* may result in discoveries of additional populations. As is the case with all recovery plans, the specified goals will be reassessed continually as additional data on the species become available.

One of the first recovery tasks is to

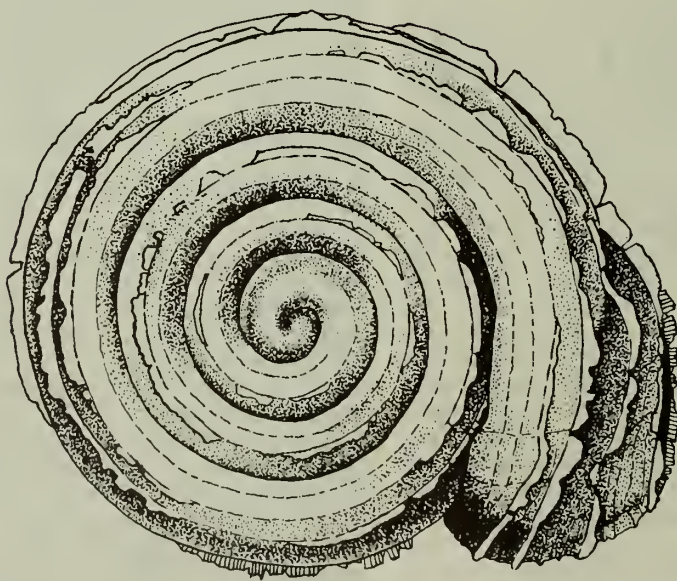
conduct additional research in order to better determine the size and status of the population at Chittenango Falls. This information will serve as an index against which to measure future changes in the snail's status. The studies will also address the snail's specific ecological requirements to help prevent future adverse alterations of the habitat. Water quality problems could be addressed by minimizing non-point source pollution, monitoring the creek and sewage treatment plant effluent for contaminant levels, and measuring toxicants present in selected invertebrates that serve as environmental indicators.

Because trampling of the snails and their habitat by visitors in the immediate area of the falls could be having a significant impact on the species, the recovery plan recommends channelling human use to nearby, but less sensitive, areas. It specifies a low-key approach that would not detract from the enjoyment of park visitors. For example, reconstructing several damaged footbridges would make it unnecessary for hikers to wander through the snail habitat while looking for a place to cross the water. Installing two short sections (15 and 46 meters) of unobtrusive fencing also would help to prevent habitat disturbance, and would be consistent with the current park management policy of controlling access to potentially dangerous points for visitor safety. An information

and education program at the park could be initiated to gain public cooperation in the conservation effort. State parks personnel are active in efforts to prevent damage from visitor use of fragile habitat areas.

The Virginia fringed mountain snail (*Polygyriscus virginianus*) is listed by the Service as an Endangered species, and is considered one of the rarest and most unusual land snails in North America. *Polygyriscus* is a monotypic genus in the family Helicodiscidae, all of which are burrowers or troglodytes. They occupy caves or lower layers of leaf litter, loose surface soil, or talus. Most, if not all, North American helicodiscids (including *Polygyriscus*) are without pigment and probably blind.

The entire known range of *P. virginianus* consists of a 2.5 km strip of embankment, bluff, and limestone talus along the New River in Pulaski County, Virginia. Live individuals have been observed at only one site, in permanently damp ground at least 25 cm beneath the surface, which is shaded and overgrown with vines. Almost nothing is known about the numbers, population dynamics, or reproduction of *P. virginianus*, largely because of the difficulty inherent in conducting research on a burrowing snail. Further, the very act of surveying for living specimens can result in severe



The Virginia fringed mountain snail has a shell that is small, only 3.9 to 4.5 mm in diameter, with comb-like fringes.

Drawing courtesy of Dr. G. Alan Solem

disturbance of the species' habitat. Based on the limited surveys in the past, the snail is thought to be very rare and low in population density.

An organism with such a restricted distribution is seriously vulnerable and can be jeopardized by many activities that may have little apparent influence on other animals or plants. *P. virginianus* does not appear to be en route to extinction through any known natural process, but several potential human-related threats have been identified. Much of the habitat is near a local road and an inactive quarry. Reactivating the quarry or widening the road without incorporating plans for habitat conservation could be major potential threats. Other possible threatening factors include roadside herbicide spraying and habitat damage caused by fires or collecting.

The recovery plan (approved May 9, 1983) names three conditions that should be met before the status of the Virginia fringed mountain snail can be considered secure. They include: 1) habitat conservation, 2) establishment of a management and monitoring plan, and 3) a finding that there is no continued downward trend in distribution or habitat quality.

1) All of the species' known habitat, which constitutes a very small area, should be given protection by negotiating cooperative agreements, conservation easements, management plans, or acquisition. This objective could be accomplished through a combination of approaches, and could involve State or private conservation agencies as well as the Fish and Wildlife Service. The plan also calls for a systematic survey of potential *P. virginianus* populations within about a 16-km radius of the known site, searching for "recently dead" shells that have been washed to the surface, followed-up by careful, selective sampling for live specimens. Habitat protection for any additional populations discovered would then be addressed.

2) The recovery plan also calls for periodically monitoring the *P. virginianus* distribution and habitat, along with developing a long-term management plan. Extensive research would be needed to better define the snail's habitat requirements. One question in particular that needs to be answered is whether or not *P. virginianus* ever comes to the ground surface, since this factor could have major implications for proper habitat management. The cooperation of the Virginia Department of Highways and Transportation will be sought in controlling the use of herbicides and in the careful design of any road projects that may affect the species. Any potential for reactivating the quarry also will be evaluated. Another

element of the recovery plan is to identify those types of human activities within the range of *P. virginianus* that may be compatible with habitat conservation as alternatives to more destructive uses. For example, it has been suggested that the base of the inactive quarry could be developed as a parking or picnic area for people fishing in the river.

3) Once the first two conditions have been met and the monitoring program shows there is no downward trend in distribution or habitat quality, the Virginia fringed mountain snail can be proposed for downlisting or delisting.

The flat-spined three-toothed snail (*Tridopsis platysayoides*) is a geographically restricted terrestrial mollusk known only from a small area adjacent to the Cheat River Canyon in Monongahela County, West Virginia. Most of its apparent range is within West Virginia's most heavily used State forest, and the species was listed by the Service as Threatened because of the potential impacts to the limited habitat from recreation.

During periods of dry weather, the snails retreat into crevices within exposed sandstone boulders and talus. When the weather turns cool and damp, however, they venture out into the isolated patches of deep, shaded leaf litter at the base of the rock outcroppings.

Heavy trampling of this leaf litter by some of the nearly 450,000 annual visitors to Cooper's Rock State Forest is reducing the snail's cover and feeding habitat. Heavy damage to the habitat also could result if the highly combustible leaf litter were ignited by an unextinguished cigarette or match.

The recovery plan (approved May 9, 1983) identifies two options, either of which could return the flat-spined three-toothed snail to a secure status. Each option addresses a different set of circumstances that may arise as additional field surveys are conducted. Potential *T. platysayoides* habitat within about a 16-km radius of Cooper's Rock will be surveyed in an effort to discover additional populations of the snail. The number of other colonies, if any, will determine which recovery option is pursued.

Recovery Option A—if *T. platysayoides* is found at fewer than three additional sites:

- 1) At least 80 percent of each known habitat site supporting the snail should be protected from human impacts by cooperative agreements, management plans, conservation easements, and/or acquisition. Microhabitats used by the species throughout active and inactive periods need to be located, and more data are required on the extent of adverse impacts from recreational use of the State forest. Information should also be col-



The shell of the flat-spined three-toothed snail is flattened, light brown or reddish-brown, and 18 to 27 mm in diameter.

Photo by S. M. Chambers

lected on potential threats from various forest management practices, general land use changes, collection, predation, pollution, and other factors. Acid precipitation could have an effect on the lichens upon which *T. platysayoides* is thought to feed, especially since the environment is low in calcium carbonate, the natural acid buffer.

- 2) Once this research is conducted, a long-term management and monitoring program can be established for the snail.
- 3) If the monitoring program shows no downward trend in distribution or habitat quality during a 10-year period, *T. platysayoides* can be proposed for delisting.

Recovery Option B—if three or more additional populations of *T. platysayoides* are discovered, all located at least a mile from each other and from the known sites:

Under this option, at least 60 percent of these sites would receive protection through cooperative agreements, management plans, conservation easements, and/or acquisition. Since a larger number of snail populations would indicate less vulnerability to extinction, less modification of current recreational use patterns at the State forest would be recommended, provided that the other sites receive adequate protection. As in Option A, a long-term management plan and monitoring program would be established, followed by a proposal to delist if the

species or its habitat does not show a downward trend for a 10-year period.

The Stock Island tree snail (*Orthalicus reses reses*) is an arboreal hermaphroditic subspecies currently confined to a small site on Stock Island in Monroe County, Florida. Historically, this snail also occupied nearby Key West, but it has been extirpated from that island and other parts of its former range by real estate development in the Florida Keys. Because of its reduced population size, the potential threats from further habitat loss, the effects of hurricanes, and the possibility of overcollecting, *O. r. reses* was listed by the Service in 1978 as Threatened.

Although information on this snail's ecology and life history is scant, preliminary investigations indicate that it inhabits a variety of trees, both native species and introduced ornamentals. It feeds on lichens, fungi, and algae, and forages mainly at night during the rainy season. The snail estivates during drier months. Due to habitat loss, *O. r. reses* is confined to a 4.8 acre patch of hammock on a municipal golf course/botanical garden and on immediately adjacent private properties. A rough estimate puts the population at 200-800 individuals of all age classes. These numbers are presumed to have been relatively steady in the recent past because the snail's habitat has been stable in area and composition over the past 40 years; however, developments and renovations on the golf course are eliminating 1.6 acres of

the 4.8 acres of essential habitat. Approximately 1,000 new hardwood trees were planted around the greens to offset this loss. (The work was completed by the developer, who has leased the golf course from the City of Key West.) But while the snail has been reduced in range to such a small area, a single natural or manmade disaster could result in its extinction.

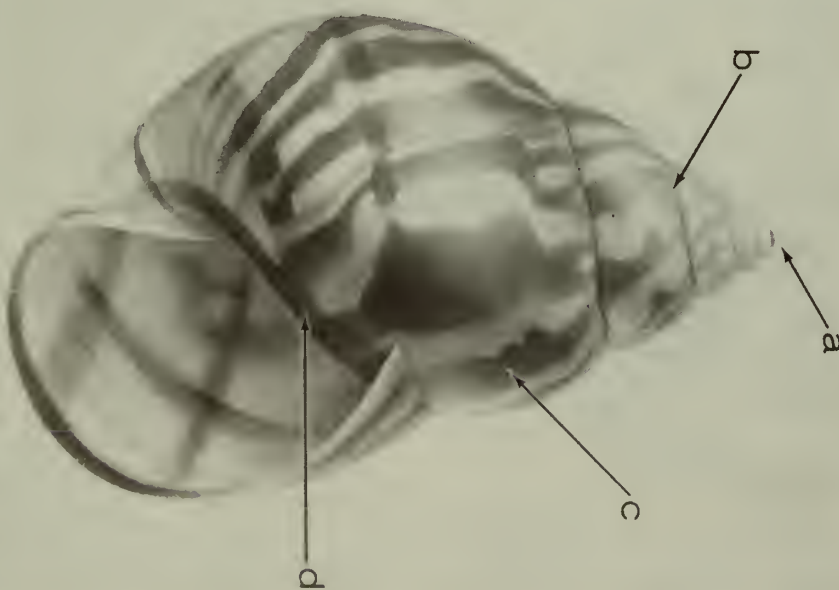
O. r. reses can be considered recovered when:

- 1) the Stock Island snail population exists in a normal, healthy density throughout at least 20 acres of protected habitat on the golf course; and
- 2) the population shows no consistent downward trend in more than 2 consecutive years of a monitoring program that would run at least 10 years; and
- 3) administrative agreements on habitat conservation are put in place to secure the cooperation of the Fish and Wildlife Service, the Florida Game and Fresh Water Fish Commission, the golf-course managers, and any other involved landowners or management agencies; and
- 4) a minimum of 30 additional stable populations within the snail's historic range on Key West are established, which may allow the snail to reoccupy other suitable parts of its former habitat.

The first three objectives involve protecting and monitoring the snails and their habitat on Stock Island. An evaluation of what constitutes a normal, healthy snail population density would be a major part of an overall research effort on the species and its ecological needs. The plan emphasizes working with the landowners, particularly the operators of the golf course, to seek ways of conserving the snails while maintaining compatible land uses. One potential problem that requires monitoring is the possible use of pesticides or herbicides on the golf course and the effect of these chemicals on the snails.

Overcollecting, another potential threat, could be addressed through public education, and the possible need for predator (rat) control would be studied.

A prerequisite to reestablishing *O. r. reses* on Key West is a thorough evaluation of the currently occupied habitat on Stock Island in order to determine the optimum conditions for the snail. A better knowledge of the reproductive biology of *O. r. reses* would be helpful in selecting the number and age-class of individuals for reintroduction, as well as in minimizing the impact of removals from the current population. Since many of the snails would be translocated to, privately owned properties on Key West, subject to landowner approval, a public education effort might be valuable in gaining greater acceptance. However,



Drawing by Lauren Keswick

The Stock Island tree snail has a relatively large (45 to 55 mm long) conical shell distinguished from those of similar snails by its weak translucence and unique color pattern. (Letters refer to text in another report)

since recent surveys indicate a considerable decline in the Stock Island population, with malicious intent suspected, the plan states that it may be prudent to proceed with initiating at least one trial reintroduction based on the existing data alone. Some suitable habitat is available on Federal property on Key West.

Higgins' Eye Pearly Mussel

North America contains the richest and most diverse freshwater bivalve fauna in the world, much of it centered in the vast Mississippi River Basin. One of these mollusks, the Higgins' eye pearly mussel (*Lampsilis higginsii*), is an Endangered clam known to occur in the Upper Mississippi River and several of its larger tributaries. Degradation of its natural riverine habitat led to a serious decline in its distribution, and the Higgins' Eye Mussel Recovery Plan (approved July 29, 1983) describes the actions necessary to return this species to a secure status.

L. higginsii apparently was never abundant, and data currently available indicate a 53 percent reduction from its historical range. This mussel is now found at sites in the Upper Mississippi River from Brownsville, Minnesota, to Burlington, Iowa, and in the St. Croix River (Minnesota) between Prescott and Hudson. Its decline parallels that of a number of other clams found throughout the region. It is unlikely that any single factor is responsible for the decline,

but rather a combination of factors.

Although the specific habitat requirements of *L. higginsii* are well known, the general alteration of the Upper Mississippi River has dramatically altered the ecosystem from a riverine to an impounded system and may have had an impact on this species.

Channel dredging to enhance navigation has been identified as a specific problem; not only are mussels physically removed from the river bottom by dredging, but the substrate is disrupted and the resulting increase in sedimentation can smother the mussel beds. It is also possible that the excessive commercial harvest of mussels in the Upper Mississippi River for mother-of-pearl during 1890-1920 could be responsible for reducing *L. higginsii*, which was already a comparatively rare species, below the levels necessary to maintain stable populations. Since mussels are filter feeders, they are affected by accumulations of pesticides, heavy metals, and other pollutants in their tissues. Additional factors, such as disease, changes in host fish distribution or density, or reductions in nutrients also may be responsible, at least in part, for the decline.

The Higgins' Eye Mussel Recovery Plan was developed to return this mollusk to a secure status by using two concurrent approaches: 1) maintaining the existing viable mussel populations (with their currently occupied habitat) and 2) enhancing and/or restoring viable populations to suitable habitat within the

species' historical range. In order to adequately evaluate the success of the recovery effort, it is essential to determine what constitutes a "viable reproduction level" and "suitable habitat" for *L. higginsii*. Several of the proposed field and laboratory studies could accomplish this task, and are an integral part of the plan.

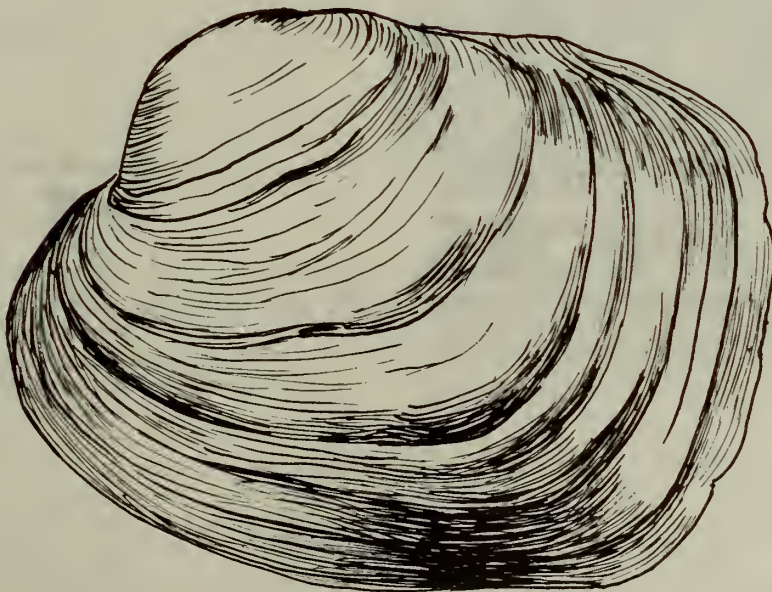
Once more is learned about the habitat requirements and reproductive biology of *L. higginsii*, the adverse impacts from human-related activities can be minimized. Among the management recommendations that may be implemented are measures to: control detrimental commercial clamming methods and sources of water pollution; develop nondetrimental navigational and channel dredging alternatives; and carry out a long-term monitoring program. Any relocation of mussels facing extirpation within their original habitat is to be considered only as a last resort.

The restoration of existing mussel colonies that are not known to constitute stable, viable reproductive populations is the second major approach. Large-scale rehabilitation of altered or destroyed historical habitat was discussed in the recovery plan but deemed impractical. However, once more information on mussel biology and limiting factors becomes available, it may be possible to enhance marginal populations by habitat management, transplanting additional specimens, or controlling competing species.

L. higginsii will be considered secure enough to propose for delisting when two criteria are met:

- 1) The existence of at least five distinct, viable reproductive populations should be established. This may be accomplished by verifying that such populations already exist, but it could require some translocation and/or artificial propagation. Each population shall then be monitored for a minimum of 10 years to ensure stability.
- 2) The five populations should be maintained in five separate navigation pools because intensive human use of the Upper Mississippi River, with the inevitable result of further impacts on the environment, will likely continue for the indefinite future. Having five separate populations will minimize the impact of any detrimental activity on the survival of the species as a whole.

Copies of these recovery plans, and all other approved plans, will be made available for purchase from the Fish and Wildlife Reference Service (FWRS). See page 3 of this BULLETIN for the address of the new FWRS contractor. A 4-6



Fish and Wildlife Service drawing

The Higgins' eye pearly mussel is a medium-to-large species; adults can exceed 100 mm in shell length. Shells range in color from yellow to brown, sometimes with green rays.

continued on page 12

Five Mullusks

continued from page 11

month printing time should be allowed following the date a recovery plan is approved and signed before copies are available. A delay should be expected when ordering newly approved plans.

New Publications

Two new reports are now available from TRAFFIC (U.S.A.). 1980 U.S. Imports of African Mammal Trophies and Skins, developed by Nancy J. Roeper, may be purchased for \$6.00. CITES Appendix I Species in Captivity, 1977-1981, by Lynn Gray-Schofield, contains maintenance and breeding data on captive mammals, birds, reptiles, and amphibians, and it costs \$7.50. Orders for these reports should be addressed to TRAFFIC (U.S.A.), World Wildlife Fund-U.S., 1601 Connecticut Avenue, N.W., Washington, D.C. 20009.

The National Marine Fisheries Service also has published two new publications. A Manual of Sea Turtle Research and Conservation Techniques, Edition II, is available in either English or Spanish (please specify in order) for \$10.00. Proceedings of the Western Atlantic Sea Turtle Symposium, also in English or Spanish, is available for \$20.00. Orders should be addressed to F.H. Berry, WATS, National Marine Fisheries Service, 75 Virginia Beach Drive, Miami, Florida 33149 USA.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	19
Birds	51	14	144	3	0	0	212	42
Reptiles	8	6	60	8	4	12	98	6
Amphibians	4	0	8	3	0	0	15	4
Fishes	30	3	11	12	1	0	57	23
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	3
Plants	56	2	0	10	1	2	71	10
TOTAL	200	43	449	49	8	36	785	124**

*Separate populations of species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

** More than one species may be covered by some plans.

Number of species currently proposed for listing: 34 animals
26 plants

Number of Species with Critical Habitats determined: 59

Number of Recovery Plans approved: 110

Number of Cooperative Agreements signed with States: 38 fish & wildlife
11 plants

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

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Ten Foreign Mammals Listed as Endangered

Ten species of foreign mammals, among them the giant panda and a bat that may be the world's smallest mammal, have been listed by the Service as Endangered (F.R. 1/23/84). Habitat loss is the main cause for their decline, although some suffer from trade, hunting, and other human activities.

• **giant panda** (*Ailuropoda melanoleuca*)—Extensive habitat disruption very early in Chinese history eliminated the giant panda from most parts of its once vast range, restricting it to small, isolated populations in a few remote mountainous areas. Due to its lower numbers, the panda is now more vulnerable to natural threats such as earthquakes and the current cyclical die-back of the arrow bamboo, its primary food. Before the habitat became so limited, pandas were able to forage more widely for other food sources during such bamboo die-backs until the seeds produced new plants. Biologists estimate that fewer than 1,000 giant pandas remain in all of China.

• **Rodrigues flying fox fruit bat** (*Pteropus rodricensis*)—Flying fox fruit bats are the largest of all bats, with some species having a wingspread of over 5 feet. The Rodrigues flying fox fruit bat is found only on Rodrigues Island in the Indian Ocean, where less than 2 percent of its original habitat remains. It has become increasingly vulnerable to the

continued on page 5



giant panda

Photo by Kojo Tanaka World Wildlife Fund

Regulations Proposed for Experimental Populations

Peter G. Poulos
Office of Endangered Species

A proposed rule to establish procedures for the designation of certain populations of listed species as "experimental populations" has been published by the Service (F.R. 1/9/84). This proposal would implement Section 10(j) of the Endangered Species Act, as amended in 1982.

An experimental population is defined as a reintroduced population (including offspring) of a listed species that is geographically isolated from the non-experimental populations of the same

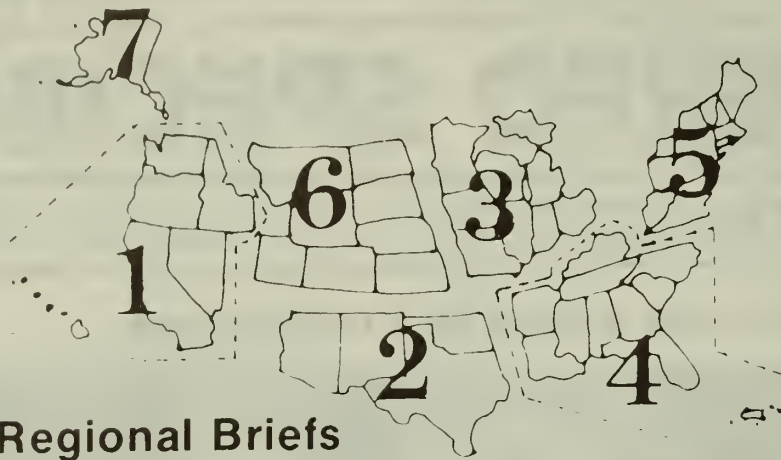
species during specific periods of time. Experimental populations can be classified in two categories, "essential" and "nonessential." An essential experimental population is one whose loss would appreciably reduce the likelihood of the survival of the species in the wild. All other experimental populations would be classified as nonessential.

Prior to the 1982 Amendments, the Service was authorized to reintroduce listed species into unoccupied portions of their historic range in order to aid in their recovery. However, legal prohibitions associated with listed species often resulted in local opposition to rein-

troductions. In an effort to encourage greater cooperation and therefore enhance the recovery capability of listed species, the concept of experimental populations was developed during the reauthorization of the Act in 1982. It was hoped that this designation would encourage greater State and local participation in recovery efforts by reducing the Section 7 (consultation) and Section 9 restrictions identified in the Act.

Section 9 strictly prohibits the taking of Endangered species. Under the

continued on page 3



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of January:

Region 1—The Olympia, Washington, endangered species staff met with the Fort Lewis command to discuss their work on two plants that are Category 1 candidates for listing. They finished

their first season surveying *Aster curtus* populations at Fort Lewis and presented a brief outline of work to begin this spring on *Astragalus columbianus* at the Yakima Firing Center.

* * *

The Olympia staff also hosted a one-

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day working team meeting on the Oregon silverspot butterfly (*Speyeria zerene hippolyta*). The meeting was to inform agencies and concerned individuals of recovery efforts for this butterfly over the past year. It was also an opportunity to receive input on ongoing recovery efforts. The meeting was attended by representatives from the U.S. Forest Service, The Nature Conservancy, Oregon Departments of Fish and Wildlife, Transportation, and Parks, and the local community.

* * *

The Bureau of Land Management (BLM) office in Idaho has postponed land sales in one of its resource areas as a result of our recommendation to conduct botanical surveys on the proposed sites. Candidate species *Allium aaseae* (Aasea's onion) is the plant of concern since it occurs in a rather narrow band of habitat between Boise and Emmett, Idaho. The sites identified for sale were in the vicinity of the plant's range.

* * *

The Great Basin staff has directed much of its efforts toward development of the Environmental Assessment and Land Protection Plan for acquisition of Ash Meadows. It met with the BLM's Nevada State Director and Las Vegas District Manager to present what it thought was required to protect the Ash Meadows ecosystem. As a result of these discussions, the staff changed its acquisition approach recommendations from providing total protection for all wetlands in the area to acquiring only those lands that The Nature Conservancy purchases from the Preferred Equities Corporation. Other methods of ecosystem conservation will be pursued in the future for the remaining lands.

* * *

The Great Basin staff, in cooperation with personnel from the Sacramento Endangered Species Office, has delineated the survey design, equipment needs, and manpower requirements to conduct an instream flow survey of the lower Truckee River. They plan to begin the second stage of the survey, which is to take flow and channel measurements, this spring. Depending upon available funds and the magnitude of the river's discharge, the survey will take from one to three years to complete. These data will be used to predict suitable habitat for cui-ui (*Chasmistes cujus*) and Lahontan cutthroat trout (*Salmo clarki henshawi*) under a wide range of stream discharges. The predictions are essential to a systematic evaluation of different water management options. The result will be more efficient use of Stam-

continued on page 7

Wyoming Toad Listed as Endangered

An extremely rare amphibian, the Wyoming toad (*Bufo hemiophrys baxteri*), has been listed by the Service as Endangered (1/17/84). This subspecies once was abundant in the Laramie Basin, but it has suffered a precipitous decline in recent times. Although the direct cause for these losses has not been determined, habitat alteration and the use of various biocides have been implicated. The last two known specimens of the Wyoming toad died in captivity last year.

Dr. George T. Baxter of the University of Wyoming has visited known breeding sites of the Wyoming toad each summer for over 30 years. After very few toads were detected from 1975-1979, an intensive survey throughout the Laramie Basin was initiated. A reward offered for information on the toad resulted in one very small population being located on 40 acres of private land in Albany County, southeastern Wyoming. The population was estimated at only about 25 individuals. In 1983, biologists working for the State of Wyoming located only two toads at the site and took them into captivity for further study, but both toads later died.

One factor suspected in the decline of the Wyoming toad is drainage of the plains adjacent to the Little Laramie River due in part to an increasing demand for irrigation water. This may have resulted in the drying-out of former toad habitat before tadpole development was complete. The widespread use of certain biocides could be another threat. Atrazene, an herbicide widely available throughout the Laramie Basin, can kill *Bufo* eggs or tadpoles. Other herbicides, such as Tordon, are more commonly used, but the effects of these chemicals on amphibians are largely unknown. Herbicides are often used for "noxious weed" control along roadside ponds and field edges typically used by the Wyoming toad. The basinwide aerial application of Baytex (Fenthion) mixed with diesel fuel for mosquito control is another practice that may be highly toxic to bufonids, especially when there is little control on the drift of the spray. In fact, there is evidence that diesel fuel alone is toxic to amphibians. Predation by a rapidly increasing population of California gulls (*Larus californicus*), as well as other animals, could be another factor in the toad's decline.

On January 27, 1983, the Service proposed a rule to list the Wyoming toad as an Endangered species (see BULLETIN Vol. VIII, No. 2). Comments on the proposal were received from the Wyoming Executive Department, Wyoming Game and Fish Department, Colorado Office of The Nature Conservancy, Mr. J.D. Stewart of the University of Kansas Museum of Natural History, and Dr. Bax-

ter. All supported the listing.

As an Endangered species, the Wyoming toad is subject to all of the conservation measures authorized by the Endangered Species Act. Taking and interstate/international trafficking in this species is prohibited, except under permit. (Implementing regulations are found in 50 CFR 17.21-.23.) The toad's habitat also receives protection under Section 7 of the Act, which requires all Federal agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species by directly affecting the animals or by adversely modifying their habitat.

A formal designation of Critical Habitat for the Wyoming toad was not made at the time of listing because, with no population sites known, its Critical Habitat is not determinable. In addition, publication of the required Critical Habitat maps would make any surviving individuals more vulnerable to illegal collecting. Nevertheless, the Wyoming toad will benefit fully from the conservation requirements of Section 7.

Extinct Mussel Removed from List

In formal recognition of its extinction, the Sampson's pearly mussel (*Epioblasma* [= *Dysnomia*] *sampsoni*) has been removed from the U.S. List of Endangered and Threatened Wildlife (F.R. 1/9/84). This mussel had occurred in portions of the Wabash River in Illinois and Indiana and in the Ohio River near Cincinnati, but no specimens have been collected in more than 50 years despite repeated sampling. The mussel's gravel and sand bar habitat has been eliminated by siltation, which followed dam construction. Decreases in water quality from chemical pollution also may have played a part in the species' decline.

As part of a continuing review to determine if the legal status of listed species reflects their current biological status, the Service contracted with Dr. Arthur Clark of Ecosearch, Inc., to study *E. sampsoni*. Dr. Clark interviewed many commercial clammers and shell buyers, and surveyed the species' historical range, but was unable to find specimens or recent evidence of the species. Even a substantial reward offered for information on *E. sampsoni* failed to yield results. Dr. Clark concluded that *E. sampsoni* is extinct.

On July 15, 1983, the Service proposed removing *E. sampsoni* from the U.S. List of Endangered and Threatened Wildlife on the grounds that it has become extinct. Three comments deal-

ing specifically with the proposed delisting were received; State conservation agencies of Illinois and Indiana agreed with the proposal, as did Ohio State University's Museum of Zoology. No evidence that the species still exists was received. The final rule removes *E. sampsoni* and its historical habitat from all protective provisions of the Endangered Species Act.

Populations

continued from page 1

experimental population designation, Endangered species would be treated as Threatened. This less restrictive designation can allow for more exceptions to the taking prohibitions by developing special regulations (50 CFR 17.84-.86) for the management of each individual population. The special rule would also include the specific geographical location of the experimental population and any special procedures to be used in its management.

Section 7(a)(2) prohibits Federal agencies from authorizing, funding, or carrying out any activity that would be likely to jeopardize the continued existence of an Endangered or Threatened species. This provision would continue to apply for essential experimental populations and all experimental populations (both essential and nonessential) located on National Wildlife Refuges or National Parks. It would no longer apply to other nonessential experimental populations. However, Federal agencies would still be asked to confer (a non-binding process) with the Service and to treat nonessential experimental populations as if they were proposed species under Section 7(a)(4). Incidentally, it should be pointed out that before individuals intended to comprise the experimental population are removed from the "donor" population, it must be determined that their removal does not violate Section 7(a)(2) of the Act.

The Service is committed to the recovery of Endangered and Threatened species, and we recognize that, without State and local cooperation, the recovery potential of many listed organisms is severely limited. Reintroducing species into parts of their historical range is often an important part of a recovery plan. The experimental designation offers the opportunity to reintroduce more organisms by increasing management flexibility and involving the States, other agencies, and organizations.

All interested agencies, organizations, and individuals are invited to comment on the proposal. Comments are due to the Associate Director, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (Attn: Experimental Populations) by March 12, 1984.

Two Fishes Proposed for Listing

Two fish species were recently proposed by the Service for listing under the Endangered Species Act: the Ozark cavefish (*Amblyopsis rosae*) and the Modoc sucker (*Catostomus microps*).

Ozark cavefish

This blind, white, cave-dwelling fish has been proposed by the Service for listing as a Threatened species (F.R. 1/31/84). It has apparently disappeared from more than 40 percent of its historical sites, primarily because of ground water pollution and (possibly) overcollecting. Currently, the Ozark cavefish is known to exist in only 13 caves in 6 counties of the Springfield Plateau of southwest Missouri, northwest Arkansas, and northeast Oklahoma.

A petition to list the Ozark cavefish was received in 1982 from Dr. A. V. Brown, of the University of Arkansas, based on his status survey work on the species in Missouri. Following the Service's acceptance of his petition, studies were conducted in Arkansas and Oklahoma. The findings indicated that the fish was declining in numbers as well as range. Contamination of the subsurface or ground water was probably the main cause of the decline in Greene County, Missouri, with toxic levels of nickel documented in one former cavefish site. Other cave systems are subject to contamination from highway, railroad, and pipeline spills; landfills and dump discharges; human and animal waste disposal; and the use of toxic chemicals.

Overcollection appears to have played a part in the species' decline. Its low numbers and reproductive abilities, confined habitat, and inability to elude captors make it very vulnerable to exploitation. There are documented instances of scientific collectors taking large numbers of the Ozark cavefish. Pet stores often display blind cavefish of various species for sale to aquarists, and offers to purchase cavefish have appeared in various publications. For these reasons, the Service decided that making a formal designation of Critical Habitat is not prudent at this time. Publicizing the caves where the Ozark cavefish survives could jeopardize this easily captured species. Nevertheless, if it is listed as a Threatened species, it will receive the full habitat protection authorized under the Endangered Species Act.

Comments on the listing proposal are invited from all interested agencies, organizations, and individuals, and are due to the Endangered Species Field Station, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 3185, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213 by April 2, 1984.

Modoc sucker

The Modoc sucker once was found in

many small stream tributaries of the Pit River in semi-arid northeastern California (Lassen and Modoc Counties). This small fish (6-8 inches in length) has suffered a rapid decline, however, due to habitat alteration, hybridization with other species, and predation by exotic fishes. It has been proposed by the Service for listing as an Endangered species (F.R. 1/31/84).

A 1978 California Department of Fish and Game survey located the Modoc sucker in eight creeks, which is probably a reduction from its former range. Currently, genetically pure individuals survive in only three small streams in Modoc County characterized by low flows and large, shallow pools with cover, soft sediments, and clear water. Pure Modoc suckers were eliminated from other creeks by hybridization with the Sacramento sucker (*Catostomus occidentalis*) as well as general habitat degradation. Historically, natural instream barriers such as falls and steep gradients prevented the movement of spawning Sacramento suckers into Modoc sucker habitat; however, these natural barriers have been eliminated by siltation, channelization, water diversion, and other effects of intensive agriculture. For example, excessive cattle grazing has compacted and denuded several meadows, resulting in severe erosion and stream incision. Channelization not only allows access to competing species, but further degrades the habitat, to the harm of resident invertebrates and fishes. The vulnerability of the Modoc sucker is compounded by predation from brown trout (*Salmo trutta*), which have been introduced in parts of the habitat. Studies have shown that the Modoc sucker, in particular, fares poorly in environments that have been degraded by physical alteration of the habitat or the presence of exotic species.

The decline of the Modoc sucker has caused widespread concern in the scientific community. Both the Fish and Wildlife Service and the State of California have been interested in the status of this fish since at least 1966, and California already lists it under State law as an endangered species. The Modoc sucker is also considered endangered by the American Fisheries Society. It was subsequently included in the Service's December 30, 1982, Review of Vertebrate Wildlife for Listing as Endangered or Threatened Species (F.R. 12/30/82). In April 1983, the Service was petitioned to list this species by the Desert Fishes Council.

Included in the Service's recent proposal to list the Modoc sucker under Federal law as an Endangered species was a proposed designation of Critical Habitat. This area comprises nearly all

known habitat of the species along five creeks in Modoc County, a total of about 12 miles of stream channel. A 50-foot riparian buffer zone on each side was included in the proposal to protect the stream channel and water quality from potentially harmful activities on adjacent lands. A Critical Habitat designation would not necessarily restrict any type of private activity; rather, it serves as a tool for Federal planners who must take into account any impacts of federally involved actions on listed species.

Comments on the proposal to list the Modoc sucker are invited from all interested agencies, organizations, and individuals, and are due to Mr. Gail C. Kobetich, Endangered Species Office, U.S. Fish and Wildlife Service, 1230 N Street, 14th Floor, Sacramento, California 95814 by April 2, 1984.

If both listing proposals are approved, the Ozark cavefish and the Modoc sucker will benefit from the conservation measures authorized by the Endangered Species Act. Recovery plans will be developed to outline the steps necessary for returning these species to a secure, self-sustaining status. Included in the regulations protecting listed species are prohibitions on taking, possessing, transporting, and engaging in interstate or international trafficking in these organisms. They will receive further protection under Section 7 of the Act, which requires all Federal agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of these species by directly affecting them or adversely modifying their habitat.

Evergreen Tree Listed as Endangered

An evergreen tree endemic to the Apalachicola River area of Florida and Georgia, the Florida torreya (*Torreya taxifolia*), has been listed by the Service as Endangered (FR 1/23/84). The primary threat to this species is a fungal disease, although some of its habitat is vulnerable.

The Florida torreya is a conifer with whorled branches and stiff, sharp-pointed, needle-like leaves. In the past, healthy trees reached heights of up to 18 meters. Since 1962, however, natural populations have been drastically reduced or eliminated by the fungus, which severely defoliates the trees by killing the needles and stems. All that remains of the species in its natural hab-



Photo by E. Laverne Smith

Disease-free specimens of the Florida *torreya*, like this one at the National Arboretum, can only be found today in cultivation.

It are root sprouts that reach less than 3 meters high and die before achieving seed-bearing size. Some uninfected, cultivated specimens exist in botanical gardens, and they can provide seeds for further recovery efforts once the disease problem is solved.

In 1981, the Georgia population of the Florida *torreya* contained 27 individuals, all on public land administered by the U.S. Army Corps of Engineers (COE) on the edge of Lake Seminole. The COE resource manager for this area is sensitive to the need for conservation of the trees, and continued protection of the species' habitat should not conflict with current recreational use of the lake. In Florida, *Torreya State Park* was established for the protection of the tree, other associated rare plants, and the unique and diverse Apalachicola River bluff ecosystem. A city park in Chattahoochee also provides some protected habitat. The majority of the *torreya* populations in Florida are on private lands, however, where there has been no formal habitat protection. In the past, some sites have been lost to construction of housing developments, and damming of ravine habitat for recreational impoundments is a potential threat.

A proposal to list the Florida *torreya* as Endangered was published in the April 7, 1983 *Federal Register* (see the BULLETIN, Vol. VIII, No. 5). In response, eight comments on the proposal were received, including letters from a number of State and local agencies. All supported with the listing.

Under the Endangered Species Act of 1973, as amended, the Florida *torreya* now benefits from Federal measures that complement the protection already given the plant by both Florida and Georgia. Interstate and international

trafficking in this species is prohibited except under permit. (The implementing regulations are found in 50 CFR 17.61-.63.) It is also unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction. In the case of the Florida *torreya*, this provision applies to the trees on COE property in Decatur County, Georgia.

A formal designation of Critical Habitat was not included in the listing rule because publication of the required maps and description would increase the threat from collectors and because disease-free habitat is not presently identifiable. Nevertheless, the habitat of the Florida *torreya* receives the full protection authorized under Section 7 of the Act. This section requires all Federal agencies (including the COE) to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species by directly affecting the plants or by adversely modifying their habitat.

Another benefit of the listing is that it authorizes a recovery effort for the *torreya*. Treatment of the diseased trees with fungicides may be possible. The healthy trees that still exist in botanical gardens and arboreta can provide seeds and other material for future transplanting into the natural habitat if the fungus can be controlled. Breeding disease resistant strains of the Florida *torreya* is another recovery possibility. However, extensive research is needed to investigate the feasibility of these approaches.

Petition Findings Announced

Initial findings have been published (F.R. 1/16/84) on the substantiality of information for certain petitions received from September 15, 1983, through November 30, 1983. Two petitions were submitted to list three species for protection under the Endangered Species Act of 1973: the orangefin madtom (*Noturus gilberti*), Roanoke logperch (*Percina rex*), and Dolloff Cave spider (*Meta dolloff*). The Service has judged that the petitions contain sufficient information to begin status reviews on these species.

Section 4(b)(3)(A) of the Act, as amended in 1982, requires that the Service make a finding whether a petition to list, reclassify, or delist a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. To the maximum extent practicable, this finding is to be made within 90 days of receipt of the petition, and the finding promptly published in the *Federal Register*. When a positive finding is made,

the Service is required to promptly begin a review of the status of the species, and to decide within 12 months of petition receipt whether the requested action is warranted in accordance with Section 4(b)(3)(D)(ii) of the Act, as amended.

Both fishes were included in a petition received October 6, 1983, from Mr. Noel Burkhead, but the required status review began earlier with the December 30, 1982, notice of review on vertebrate species. The orangefin madtom is currently known from the Roanoke River drainage in Virginia and North Carolina and from a tributary of the James River in Virginia. The Roanoke logperch is known only from scattered sites in the Roanoke River drainage, including the Dan and Chowan Rivers, within Virginia. For the Dolloff Cave spider, the required status review began with the January 16, 1984, *Federal Register* notice. This spider, petitioned by Mr. Thomas S. Briggs, is known from only three neighboring caves in Santa Cruz County, California.

The Service is soliciting data on these three species now under review for listing. Especially sought is information on taxonomy, distribution, threats, and possible Critical Habitat. Comments may be submitted until further notice, and all will be considered in any future actions on these taxa. Address comments to the Associate Director - Federal Assistance, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Ten Mammals

continued from page 1

destruction of its food sources, the effects of cyclones, and the local human population, which considers the large bats a delicacy. A 1976 estimate of the bat population was 120-125, and it appeared to be declining further.

- **Bulmer's flying fox fruit bat** (*Aproteles bulmeri*)—First known from fossil remains in central Papua New Guinea dating back 9,000-12,000 years, this large bat was thought to be extinct until 1975, when a single individual was killed by a native hunter at a mountain cave. Two years later, an intensive survey for the bat found that a local hunter had driven away nearly the entire colony. This bat is a prized food item in Papua New Guinea, but a few might have eluded hunters in remote, sparsely inhabited parts of the large island.

- **Singapore roundleaf horseshoe bat** (*Hipposideros ridleyi*)—Horseshoe bats are characterized by their peculiar horseshoe-shaped nose leaf. Forty-five species of horseshoe bats are widely distributed throughout Africa, India, and southeast Asia. The already limited low-



bumblebee bat

land peat forest habitat of the Singapore roundleaf horseshoe bat has suffered heavy logging in recent years. By 1975, the total population of this Malayan species was estimated at fewer than 50 individuals.

• **bumblebee bat** (*Craseonycteris thonglongyai*)—This bat may be the world's smallest mammal. Its body is slightly more than one inch in length, and its weight is only about 2 grams. Vast areas of teak-bamboo forests, where the bumblebee bat forages for insects, have been lost to logging and land clearing. During extensive surveys in 1982 by the Thailand government, the bats were found in only three caves, and the total known population was 160 individuals.

• **Preuss's red colobus** (*Colobus badius preusii*)—This primate is another mammal whose habitat has been devastated by tropical deforestation. Today, its range has been reduced to a strip of remnant lowland evergreen forest along the Camaroon side of the Camaroon-Nigeria border. In addition to logging, which fragments the forest canopy, these animals are also jeopardized by hunters who take them for food. It is estimated that fewer than 8,000 of the Preuss's red colobus survive.

• **African wild dog** (*Lycaon pictus*)—Widespread persecution as a hated predator has decimated this canid over most of its sub-Saharan range. In 1980, fewer than 7,000 of the dogs were thought to remain in all of Africa. These wild dogs live in packs comprised of males, with only a single female generally being present in any one pack. The female drives her daughters out of the pack when they reach adulthood, and they wander about until they join a male

pack which has lost its resident female. Male pups remain in the pack when they become adults. This social system seems to be unique among mammals. In most other social mammals, females comprise the stable element in a herd or pack.

• **buff-headed marmoset** (*Callithrix flaviceps*)—This small tree-dwelling primate was historically distributed throughout the mountains of southeastern Brazil, but destruction of its forest habitat, along with exploitation for biomedical research and the pet trade, extirpated all but a few small, scattered populations. Currently, tropical deforestation is the main threat.

• **Pakistan sand cat** (*Felis margarita scheffeli*)—Relentless exploitation for the fur and live animal trade from 1968-1972 drove this already-rare species to the brink of extinction. A few are thought to remain in northern Pakistani Baluchistan, but since 1972 they have been extremely difficult to find in the wild. There are no known breeding groups in captivity.

• **Vancouver Island marmot** (*Marmota vancouverensis*)—Between 100 and 150 marmots of this species remain in four general areas on Vancouver Island, British Columbia, Canada. Its limited habitat—alpine to subalpine areas characterized by steep slopes, talus debris, and open meadow—has been reduced by construction of ski developments. Logging and additional development proposed for the island could eliminate more habitat. According to the listing rule, "any further reduction must be viewed with alarm."



buff-headed marmoset

These ten mammals were among the twelve proposed for listing as Endangered on March 1, 1983 (see BULLETIN Vol. VIII No. 4). Comments on the proposal were received from a number of scientific organizations, individuals, a zoo, and wildlife officials of nine countries. Most either gave support to the proposed listing or expressed no opposition. An exception was the Government of Australia, which provided data that the eleventh mammal, the ghost bat (*Macroderma gigas*), is not as rare as indicated in the proposal and is not in need of listing. The twelfth mammal is the Indus River dolphin (*Platanista indi*). The National Marine Fisheries Service (NMFS) pointed out that because this mammal is a cetacean, it is legally under NMFS jurisdiction. All data on the threats to this freshwater dolphin have



Vancouver Island marmot

therefore been turned over to NMFS, which will determine whether or not to proceed with a listing.

As Endangered species, the ten newly listed foreign mammals will receive the protection authorized under the Endangered Species Act of 1973, as amended. All trade prohibitions in Section 9(a)(2) of the Act will apply. These prohibitions, in part, make it illegal for any person subject to U.S. jurisdiction to possess, transport, or engage in interstate or international trafficking in these species. Permits to carry out otherwise prohibited activities involving Endangered species are available under 50 CFR 17.22 and 17.23 for approved scientific or conservation purposes. The Service does not anticipate that listing these 10 mammals as Endangered will hinder or interfere with legitimate conservation activities, such as the current scientific studies that are being conducted on the giant panda. In addition to the protective measures described above, the 10 mammals may benefit from U.S. expertise that could be made available to the resident countries in order to assist in the development of conservation or management programs.

Regional Briefs

continued from page 2

pede Reservoir for fish resources, improved ability to quantify the impact of the Bureau of Reclamation's new Operation Criteria and Regulation for the Newlands Project, and a fish habitat guide to direct the rehabilitation and stabilization of the river channel.

Cooperative FWS/State patrols at Pyramid Lake, Nevada, resulted in 15 apprehensions of subjects illegally taking the Threatened Lahontan cutthroat trout.

FWS agents in Santa Maria, California, assisted in apprehending a subject accused of mutilating Endangered brown pelicans (*Pelicanus occidentalis*) in Monterey, California. The subject was tried and convicted on six felony counts of State law violations.

A Priest River, Idaho, man who had been indicted last October by a Federal grand jury on charges of killing and possessing a Threatened grizzly bear (*Ursus arctos horribilis*) pled guilty in January to the possession charge. (Under a plea bargaining agreement, the other charge was dropped.) The U.S.

magistrate sentenced him to a year in jail and a \$10,000 fine, but suspended the jail term and reduced the fine to \$1,500 after receiving a sentencing report. The guilty man was also placed on federally supervised probation for 3 years, during which time he will not be allowed to hunt, and he must volunteer 150 hours of community service.

The grizzly had been shot with a bow-and-arrow by the guilty hunter, who was perched out of reach in a tree stand over a bait of rotten meat. This bear was taken in the Selkirk Mountains, where only about one-half dozen grizzlies are thought to remain.

Region 2—One of the 30 whooping cranes (*Grus americana*) in the Gray's Lake/Bosque del Apache flock has died of lead poisoning. The bird, a 1½ year old male, was first observed acting strangely on January 5, 1984, at Bosque del Apache National Wildlife Refuge (NWR), New Mexico. By January 20, the bird was in obvious distress and a decision was made to capture it. Service biologists Dr. Rod Drewein and Mike Hawkes netted the crane after dark on January 21. At capture, the bird weighed 9 pounds; a healthy bird at that age would weigh about 15 pounds.

The bird was moved to the excellent facilities at the Rio Grande Zoo in Albuquerque, where x-rays located three lead shotgun pellets lodged in the upper leg. In spite of special care and treatment, the crane died on January 23. An autopsy found 7.5 grams of lead in the gizzard and 5.1 parts per million of lead in the blood, indicating that the cause of death was from ingestion of toxic lead shot rather than the pellets in the leg.

Where the lead shot was ingested and who shot the bird are unknown. Waterfowl and dove hunting are widespread throughout most of the Gray's Lake/Bosque del Apache whooping crane migratory route. Snow goose (*Chen caerulescens*) hunting is allowed at Bosque del Apache NWR, but only non-toxic steel shot is approved for use there. This is the first whooping crane known to have died of ingesting lead shot, although waterfowl often take in shot while picking up grit for their gizzard.

The other whooping and sandhill cranes (*Grus canadensis*) at Bosque del Apache NWR are being carefully watched for the characteristic signs of lead poisoning. As of January 27, no additional sick birds had been noted.

A meeting of the Lower Colorado River Fish Group was held in Blythe, California, on January 24, 1984. Reintroduction of razorback suckers (*Xyrauchen texanus*), Colorado squawfish (*Ptychocheilus lucius*), woundfin (*Plagopterus argentissimus*), bonytail chub (*Gila elegans*), and desert pupfish

(*Cyprinodon macularius*) was discussed, along with the recently published draft regulations for experimental populations (see story in this issue). The unlisted sucker and pupfish are already being stocked, in Arizona waters, but reintroduction of the Endangered squawfish, woundfin, and chub will have to await final approval of the experimental population packages submitted for them last July.

Region 3—The Region 3 Endangered Species Staff met with the National Park Service (NPS) and State of Wisconsin on the second stage of the bald eagle (*Haliaeetus leucocephalus*) study at the Apostle Islands in Lake Superior. The purpose of the NPS-funded study is to determine the causes for the low productivity of eagles in the area.

The State of Minnesota hosted another meeting, in which the Region 3 staff also participated, to plan next year's bald eagle activities and discuss last year's results.

Region 5—A critical phase in the Virginia round-leaf birch (*Betula uber*) recovery program will be initiated early this spring. Intensive and cooperative efforts among the U.S. Forest Service (USFS), Virginia Polytechnic Institute and State University (VPI&SU), and the Fish and Wildlife Service are underway in the hopes of establishing additional populations of this Endangered tree on USFS lands. Approximately 375 2-year old seedlings will be "out-planted" in early April at five selected sites in Jefferson National Forest. The seedlings have been propagated and generously cared for by private contributions from staff of VPI&SU and the Reynolds Research Center in Critz, Virginia. Although there has been a continued decline in the single remaining natural population, biologists involved in the recovery effort are cautiously optimistic about the prospects for future success.

Biologists from New York and the Northeastern States met on January 12 in the Service's Region 5 Office to exchange information and discuss the current status of the small whorled pogonia (*Isotria medeoloides*). Based on innovative and improved field survey techniques developed by The Nature Conservancy, several new populations of this Endangered orchid have recently been found. Thirty-one sites are now known to exist in the eastern U.S., 18 of them in New England. Five of the populations consist of over 200 plants each. An ongoing monitoring effort, species biology research, additional field surveys, and recovery plan development also were discussed at the meeting. Persons interested in a summary of the meeting can contact Dick Dyer, Regional Botanist, at 617/965-5100, extension 316.

The running buffalo clover (*Trifolium stoloniferum*) has been rediscovered in West Virginia. This obscure plant historically occurred from Kansas to West Virginia in the Ohio and Missouri River Basins, but the last collection in West Virginia was in 1940. The species was considered possibly extinct in the eight States in which it once occurred until it was found in West Virginia last fall. Only a very small colony of plants was located, but botanists are hopeful that additional field work will result in the discovery of more sites.

Region 6—In October 1983, more than 22,000 greenback cutthroat trout (*Salmo clarki stomias*) fry were transported from the Federal fish hatchery in Bozeman, Montana, for release in Colorado. This is the third year in a row that these releases have taken place. The releases have been a cooperative effort among the U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, and Colorado Division of Wildlife for the reestablishment of the Threatened greenback cutthroat trout. To date, over 66,500 have been returned to Colorado waters.

The Region 6 Office was notified in December that a young, male black-footed ferret (*Mustela nigripes*) was picked up on the edge of a road 35 miles east of Cody, Wyoming, on June 13, 1983, by a Canadian couple. Such a find might have indicated the existence of another population of this very rare species. Unfortunately, however, the animal was subsequently identified as a European polecat (*Mustela putorius*) through the cooperative efforts of the U.S. Fish and Wildlife Service and the British Columbia Ministry of Environment.

Region 7—Two of the American peregrine falcons (*Falco peregrinus anatum*) banded as nestlings along the Yukon River in Alaska in 1983 were captured at Padre Island, Texas, last fall. These are

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	233	3	0	22	291	19
Birds	51	14	144	3	0	0	212	42
Reptiles	8	6	60	8	4	12	98	6
Amphibians	5	0	8	3	0	0	16	4
Fishes	30	3	11	12	1	0	57	23
Snails	3	0	1	5	0	0	9	5
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	3
Plants	57	2	0	10	1	2	72	10
TOTAL	200	43	449	49	8	36	796	124**

* Separate populations of species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

** More than one species may be covered by some plans.

Number of Recovery Plans approved: 110

Number of species currently proposed for listing: 25 animals
25 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 38 fish & wildlife
12 plants

January 31, 1984

the only encounters so far of the 237 young peregrines banded in Alaska in 1983, but they bring to 26 the total number encountered (trapped or found) since the major banding effort began in Alaska in 1979. A total of 891 young peregrines have been banded during the first 5 years of the program. Banded bird encounters have ranged from Alaska to Brazil, with Padre Island alone accounting for nine. Eleven of the encounters have been at nesting sites in interior Alaska.

The Aleutian Canada Goose Recovery Team held its annual meeting in Arcata, California, during November 29-December 1, 1983. Representatives of the States of Oregon, California, and Alaska attended, as well as U.S. Forest Service and U.S. Fish and Wildlife Ser-

vice personnel. The recovery effort continues to yield encouraging results. Last fall, a peak count of 3,800 Aleutian Canada geese (*Branta canadensis leucopareia*) was made at Crescent City and near Colusa, California, in their California wintering grounds. This is a 9 percent increase over the previous year's high count, and approaches a 5-fold increase in population (up from 790) since hunting closures were first put into effect in 1975.

Dr. Paul Springer reports that 52 of 108 geese transplanted from Buldir to Agattu in the Aleutian Islands last summer have successfully migrated and been observed in California. There is hope that the hatching-year birds among the transplants will return to Agattu to breed, thus establishing a new breeding population.

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

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Wood Stork Listed as Endangered Species

The U.S. breeding population of the wood stork (*Mycteria americana*) has decreased over 75 percent from its 1930 levels, leading the Service to list this large bird as an Endangered species (F.R. 2/28/84). It is the only true species of stork breeding in this country. Without a change in current trends, this wood stork population could become extirpated by the turn of the century. Destruction and alteration of feeding habitat are the main reasons for its decline in range and numbers.

Wood storks are large, long-legged, white wading birds with an unfeathered gray head and a thick, dark bill. They frequent freshwater and brackish wetlands, feeding primarily on small fish

that they locate by groping in shallow water with their long beaks. Wood stork nests are constructed in cypress and mangrove swamps, habitat types that have been steadily reduced in acreage over recent decades. The U.S. breeding population of the wood stork has declined from an estimated 20,000 pairs in the 1930s to fewer than 5,000 pairs each year since 1978. Artificial manipulation of natural water regimes, particularly in the important south Florida area, has decreased prey fish numbers and availability. Losses of nesting habitat also may be affecting storks in central Florida. Disturbance by humans during the nesting season at some rookeries

continued on page 3

Protection Given to Two Rare Hawaiian Plants

Two very rare species of plants that are restricted to the rim of Diamond Head Crater on the island of O'ahu, Hawai'i, have been listed by the Service as Endangered (2/17/84). Each species is known only from a single small population, and both are vulnerable to habitat degradation and accidental brush fires.

Bidens cuneata (cuneate bidens), an herb, and *Schiedea adamantis* (Diamond Head schiedea), a small shrub, are of great scientific interest because they belong to families that have undergone much evolutionary diversification since becoming established in the Hawaiian Islands. Both are members of genera that make excellent models for the study of evolution and adaptive radiation in insular floras. The various species of *Bidens* (generically known as ko'oko'o-lau in the Hawaiian language) found in the islands are already being used for such research. Additionally, *Schiedea*, an endemic genus in the carnation family, has an unusual floral structure that makes its reproductive system one of particular botanical interest.

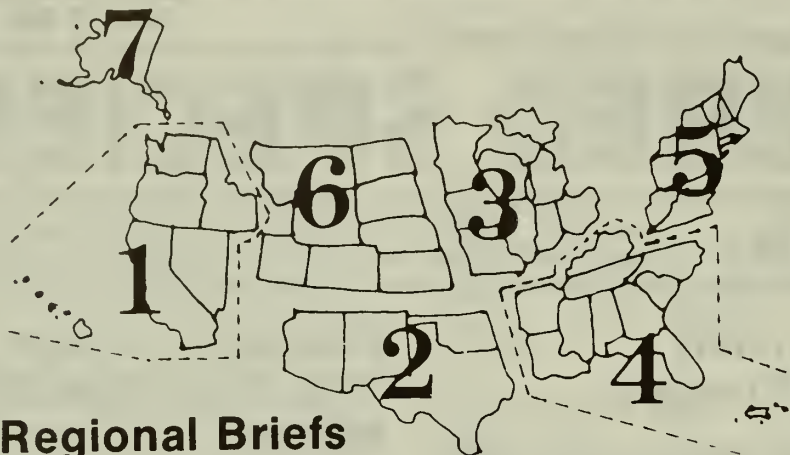
The single populations of both species are located just below a hiking trail that follows the crater crestline. Although the Hawai'i Division of State Parks discourages hiking along the crater rim for safety reasons, except in a few selected places, the presence of the trail does attract use. The result is soil compaction and loss of vegetative cover, leading to erosion of the habitat. Some inadvertent trampling of the plants also could occur since the trail passes through or near both population sites. These threats could intensify because the State intends to make Diamond Head a public park and recreation area. It does not plan to develop those portions of the rim trail near the plants, but the increased number of visitors will necessitate measures for their conservation.

Increased public use could also mean increased danger from fire. Due to the dry conditions in the area, fire is already a significant hazard. A single blaze

continued on page 7



wood stork



Regional Briefs

Region 1—The FWS Boise Field Station's Project Leader attended the recent Yellowstone ecosystem grizzly bear (*Ursus arctos horribilis*) management sub-committee meeting. The Yellowstone area land management agencies have agreed to start a cumula-

tive effects analysis of the entire ecosystem. When completed, this information should give us a much better picture of grizzly recovery potential and assist us in Section 7 evaluations.

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The Boise Field Station team botanist met with the Bureau of Land Management (BLM) concerning recovery work on *Mirabilis macfarlanei* (MacFarlane's four-o'clock). A BLM temporary botanist will map and start field studies on the new *M. macfarlanei* site found last season. It has also agreed to make arrangements for Soil Conservation Service scientists to do a complete soils analysis of the *M. macfarlanei* sites in Idaho. A BLM biologist is going to accompany us on the helicopter survey next season.

Updated information on *M. macfarlanei* was presented to Nez Perce National Forest personnel. They are going to look at U.S. Forest Service lands and explore with us the possibility of establishing an experimental population.

Recently, the Great Basin Complex completed an analysis of several hypothetical water management plans under consideration by the negotiation team that is attempting to resolve Truckee-Carson River water use conflicts. The purpose of our analysis was to estimate the impact of seven different plans on the survival and recovery of cui-ui (*Chasmistes cujus*) and Lahontan cutthroat trout or LCT (*Salmo clarki henshawi*). Although the effective habitat/time model is the best approach for assessing the plans, it requires more information than is available. Instead, an abbreviated analysis will be done to compare the monthly hypothetical flows that would have occurred over the past 80 years under a given plan to those flows required for Endangered or Threatened species. The results of this analysis should provide sufficient information on the beneficial and harmful impacts of each plan.

During the last 2 months, the Great Basin Complex staff has been working with the Pyramid Lake Indian Tribal Enterprises (PLITE) to develop a Memorandum of Understanding. Its purpose is to develop a cooperative program for the conservation and restoration of LCT and cui-ui in waters of the Pyramid Lake Indian Reservation by identifying resource management, fish production, and research obligations of the Service and PLITE.

The Bureau of Reclamation has agreed to fund an instream flow study of the lower Truckee River this year. Completion of this study will allow for better evaluation of proposed water management plans and increase the prospects for an equitable resolution of water use conflicts on the Truckee-Carson Rivers. This will also result in improved efficiency of Stampede Reservoir management. In addition to these benefits, survey data will identify the quality of available habitat in proposed areas of major rehabilitation for the cui-ui and LCT.

Region 2—One of the adult male radio-collared ocelots (*Felis pardalis*) in southeastern Texas was found dead just south of Laguna Atascosa National Wildlife Refuge on January 30, 1984. It appeared to have been dead about 4 days when found. An autopsy performed by the Texas Veterinary Medical Diagnostic Laboratory at College Station, Texas, revealed that the animal probably died of distemper or acute pneumonia. Distemper is known to be present in the south Texas environment; however, the weather conditions for January would have been more conducive to development of pneumonia. A nearby radio-collared male immediately moved into the dead animal's former territory. Nine radio-collared ocelots, three males and six females, are still being followed on the refuge, while two males have been collared on private lands.

A draft Alligator Management Plan has been received from the State of Texas. This plan was part of the agreement that resulted in the alligator in Texas (*Alligator mississippiensis*) being downlisted to Threatened by Similarity of Appearance. After completion and approval of its management plan, the Texas Parks and Wildlife Department plans to initiate an annual limited season for taking alligators.

Personnel changes within the Southwest Bald Eagle Recovery Team have recently been made. The team is now composed of Richard L. Glinski, nongame biologist, Arizona Game and Fish Department, leader; Jennifer Fowler, FWS biologist, Ecological Services Field Office, Phoenix; Dave Busch, wildlife biologist, Bureau of Reclamation, Boulder City, Nevada; and Erwin Boeker, representing the National Audubon Society. Glinski replaces Duane Rubink (FWS) as leader. Boeker returns to the team after having served from 1976 to 1978 as the team leader and the FWS representative. The Southwest Bald Eagle Recovery Team assists in overseeing implementation of the recovery plan, which was signed in 1982.

A working group of the Kemp's ridley sea turtle (*Lepidochelys kempii*) project met in Albuquerque to review 1983 results and plan for the 1984 field season. The Kemp's ridley project protects sea turtle eggs on Rancho Nuevo Beach, Tamaulipas, Mexico, incubates up to 2,000 eggs, and imprints the resulting hatchlings briefly on the beach at Padre Island National Seashore, Texas. The imprinted hatchlings are then "head-started" at Galveston, Texas, to give them a better chance for survival when released. It is hoped that the released female turtles will return to Padre Island to nest when they mature. Included in

the project are biologists from the Service, Instituto Nacional de la Pesca (Mexico), Sub-Secretaria de Ecologia (Mexico), National Park Service (U.S.), National Marine Fisheries Service (U.S.), Texas Parks and Wildlife Department, and the Gladys Porter Zoo (Brownsville, Texas). The 1984 field season will be the seventh year of this 10-year project.

Region 7—A biological assessment examining the impacts of the Red Dog Mine project on the Endangered Arctic peregrine falcon (*Falco peregrinus tundrius*) has been received from the Environmental Protection Agency. Extraction of the estimated 85 million tons of lead, zinc, and silver ore from this remote, roadless area 100 miles northwest of Kotzebue in arctic Alaska, will require the establishment of a complete, self-contained facility necessary to mine the ore, concentrate the metals, transport the metals to a saltwater port, and house 250-500 workers. Construction of small dams and an overland transportation corridor 55-70 miles in length is proposed, as well as an airstrip and coastal port facility.

Consideration was given to the peregrine falcon early in project planning, and recent surveys have identified peregrine use areas. Although there are still concerns about the project's effects on water quality, fisheries, migrating caribou (*Rangifer tarandus*), and the Endangered bowhead (*Balaena mysticetus*) and gray whales (*Eschrichthius robustus*), we are optimistic that impacts on the peregrine falcon will be minimal.

Wood Stork

continued from page 1

has caused adult birds to leave their nests, exposing the eggs to predators and the elements.

Breeding wood storks in the U.S. are now restricted to parts of Florida, southeastern Georgia, and South Carolina. (Formerly, nesting occurred also in Texas, Louisiana, Mississippi, and Alabama.) The remaining U.S. breeding population of the wood stork is separate from the population that breeds from Mexico southward to Argentina. Wood storks from Mexico disperse into California and Texas after nesting; however, only the southeastern U.S. population needs Endangered Species Act protection at this time.

On February 28, 1983, the Service proposed listing the U.S. breeding population of the wood stork as Endangered (see feature in BULLETIN Vol. VIII No. 3). The comments received in response to the proposal from Federal, State, and

local agencies, along with a number of conservation organizations, private companies, and individuals, are summarized in the final listing rule. Among the States that supported Federal listing of the wood stork are Florida and South Carolina; both States already give the species protection from taking and provide for certain conservation efforts under their own endangered and threatened species legislation. The Federal listing under the Endangered Species Act brings additional conservation and recovery benefits.

As an Endangered species, the U.S. breeding population of the wood stork receives all of the protection authorized under the Act. Taking, possessing, transporting, and engaging in interstate or international trade in this species are among the activities prohibited. (Permits are available for certain scientific, conservation, and economic hardship cases.) Although a formal designation of Critical Habitat was not included in the listing rule, the stork and its habitat will receive all of the protection authorized under Section 7 of the Endangered Species Act. Federal agencies are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the wood stork by directly affecting the birds or by adversely modifying their habitat. The Federal agency primarily affected by Section 7 provisions is the U.S. Army Corps of Engineers, which now must take the wood stork into account in issuing permits for the discharge of dredge or fill material into U.S. waters. Similarly, Environmental Protection Agency permitting activities under the National Pollutant Discharge Elimination System will have to consider the welfare of the species.

Other benefits to the wood stork of the listing are a wider public knowledge of its reduced status, possible Federal funding of State conservation programs for the species, and the development of a recovery plan.

Finding on Alligator Snapping Turtle Petition

After a review of the available biological information on the status of the alligator snapping turtle (*Macrochelys temminckii*), the Service has concluded that a proposal to list this species as Endangered or Threatened is not justified at this time (F.R. 2/29/83). The review was carried out in response to a February 23, 1983, listing petition from Dr. Peter C.H. Pritchard.

The alligator snapping turtle is the largest freshwater turtle in North America. Adult specimens can weigh up to

continued on page 8

Two Foreign Reptiles Listed, One Delisted

Two species of lizards found on islands under Spanish jurisdiction have been listed by the Service as Endangered and Threatened due to threats from habitat destruction, overcollection, and predation (F.R. 2/29/84). In the same notice, the Service removed from the U.S. List of Endangered and Threatened Wildlife a turtle that is now known to occur widely throughout India and Sri Lanka.

The Hierro giant lizard (*Gallotia simonyi simonyi*), now listed as Endangered, is a large (up to 70 cm total length) herbivorous species that occurs only in the Canary Islands. Its known range consists of a single arid cliffside where, in 1975, an estimated total population of 200 lizards survived. Assuming it still exists, the population is threatened by: 1) a proposed stone-breaking plant that could directly affect the lizards and coat their food plants with dust; 2) competition with goats grazing the area; 3) possible overcollecting; and 4) potential predation on juveniles by gulls.

The Ibiza wall lizard (*Podarcis pityusensis*), listed as Threatened, is a small lizard found in the Balearic Islands. Alteration and destruction of the lizard's

habitat by construction of tourist developments are serious threats on some of the islands. Overcollection for scientific and commercial purposes, hybridization of subspecies transported among the islands, and predation by gulls, rats, and feral cats are other factors that have had an adverse impact on the majority of Ibiza wall lizard populations.

The Indian flap-shelled turtle (*Lissemys punctata punctata*) is a 15 to 28 cm brown, soft-shelled species found on the Indian subcontinent and on Sri Lanka. Its original listing as Endangered was based on a recommendation by Bangladesh that the species be included on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). As a result of its inclusion on Appendix I of CITES, the Service subsequently (1976) listed the turtle as Endangered. However, as part of the Service's continuing effort to ensure that the legal status of listed species reflects their true biological status, a literature review on this turtle was recently conducted. No supporting evidence justifying Endangered classification could be found. The Service then contacted a number of scientists to determine what field data

might support the listing, and the unanimous response was that there was no justification for retaining the turtle's listed status. The species in fact may be the most abundant freshwater turtle in India. After studying the data, the Service concluded that the Indian flap-shelled turtle is neither Endangered nor Threatened, and the species has been removed from the list.

As Endangered and Threatened species, both the Hierro giant lizard and the Ibiza wall lizard now receive U.S. protection under the Endangered Species Act. It is illegal for any person subject to U.S. jurisdiction to take, possess, transport, or traffic in these reptiles except under permit. Such permits are available under 50 CFR 17.22-17.23 and 17.32 for certain scientific, conservation, or economic hardship purposes. In addition, the Department of the Interior is authorized by Section 8 of the Act to provide assistance to Spain for the conservation of the species. With regard to the Indian flap-shelled turtle, the provisions of the Act no longer apply; however, the removal from protection under the Act does not affect its CITES status, and it remains subject to Appendix I trade restrictions.

Endangered Classification for Woodland Caribou Becomes Permanent

The temporary protection given earlier to a population of woodland caribou (*Rangifer tarandus caribou*) was made permanent recently when the population was listed in a final rule as Endangered (F.R. 2/28/84). Sometimes known as the southern Selkirk Mountain herd, these animals comprise the only population of caribou that still regularly occurs in the conterminous United States. The herd ranges over parts of extreme north-eastern Washington, northern Idaho, and southern British Columbia. Poaching, habitat loss, collisions with motor vehicles, and genetic problems from inbreeding threaten the very small population with extinction. It had earlier been listed as Endangered under two temporary emergency actions (see feature story in BULLETIN Vol. VIII No. 1).

Woodland caribou once occupied nearly the entire forested region from southeastern Alaska, through much of Canada, to the northern conterminous States. Due to unrestricted shooting and extensive habitat alteration, however, only the southern Selkirk Mountain herd survives in the conterminous U.S. (Caribou numbers in Canada, though still substantial, also have been declining.) Only about 30 individuals are thought to remain in the herd, based on recent

radio-tracking studies and other survey work conducted since January 1983. Although this number is slightly higher than previous estimates, it reflects better field data rather than population growth. The southern Selkirk Mountain herd of woodland caribou can still be ranked as one of our Nation's most critically Endangered mammals.

Any additional losses in the population could be disastrous to its survival, yet the potential for such losses is increasing. Timber cutting, if not properly planned, could significantly impact caribou by reducing escape cover, migration corridors, and lichen (food plant) production. Illegal shooting has also been a continuing problem. Poachers killed at least one animal from this population each year from 1980 to 1983, and similar losses also occurred in previous years. Construction of roads through the habitat could aggravate the poaching problem, and increase the chances for caribou/vehicle collisions. Since the very small population is isolated and, therefore, has no genetic exchange with other herds, the southern Selkirk Mountain caribou likely suffer the effects of inbreeding. Such a condition could be responsible for low calf survival in the herd.

The southern Selkirk Mountain herd was first classified as Endangered in a temporary emergency listing published in the January 14, 1983, *Federal Register*. A proposal for a final listing was published on June 22, 1983; however, because a final rule was not completed before the first emergency listing rule expired, a second emergency rule was published on October 25, 1983. The February 28, 1984, final rule gives the herd permanent protection.

Under the Endangered classification, the southern Selkirk Mountain herd of woodland caribou will receive the protection authorized by the Endangered Species Act. Taking, possessing, transporting, and interstate or international trafficking in this mammal are prohibited except under Federal permit for certain scientific, conservation, and economic hardship purposes. A designation of Critical Habitat was not included in the rule because printing the required maps could make the small herd even more vulnerable to poaching; nevertheless, the herd will receive the full habitat protection authorized under Section 7 of the Act. Federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of the species

by directly affecting the animals or adversely affecting their habitat. Most of the habitat of the southern Selkirk Mountain herd is on land managed by the U.S. Forest Service (USFS). The listing is not expected to have substantial effect on timber production since the USFS is already using caribou management guidelines to design timber sales in caribou habitat. Certain logging practices, if properly planned, could even prove to enhance the habitat's value to the caribou by encouraging the growth of food and cover plants. Other benefits to the caribou of the listing include more law enforcement protection, possible funding for State endangered species conservation programs under Section 6 of the Act, and development of a recovery plan to return the herd to a viable, self-sustaining status.

Ash Meadows Becomes Nature Preserve

Ash Meadows, Nevada, a unique desert wetland ecosystem, has been purchased by The Nature Conservancy for protection as a nature preserve. Until recently, this oasis in the Mojave Desert was subject to development that could have resulted in extinction for its unusual wildlife and plant resources. Congress has appropriated funds to reimburse the Conservancy and make Ash Meadows part of the Fish and Wildlife Service's National Wildlife Refuge System.

The Ash Meadows ecosystem is made up of several dozen springs and seeps scattered throughout a valley about 70 miles northwest of Las Vegas (see feature in BULLETIN Vol. VII No. 6). Due to their isolation in a desert where the average rainfall is only about 70 mm (less than 3 inches), the thermal springs of Ash Meadows contain the highest concentration of endemic plant and animal species in the continental United States. Four fishes found nowhere else, the Devils Hole pupfish (*Cyprinodon diabolis*), Warm Springs pupfish (*C. nevadensis pectoralis*), Ash Meadows Amargosa pupfish (*C. n. mionectes*), and Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*), are listed as Endangered. Another, the Ash Meadows killifish (*Empetrichthys merriami*), became extinct a number of years ago, probably due to the introduction of exotic species.

Seven plants in the Ash Meadows ecosystem were proposed on October 13, 1983, for listing as Endangered: the spring-loving centauray (*Centaureum namophilum* var. *namophilum*), Ash Meadows gumplant (*Grindelia fraxinopratensis*), Ash Meadows ivesia (*Ivesia eremica*), Ash Meadows blazing star (*Mentzelia leucophylla*), Ash Meadows



Photo by D. W. Sada

This unnamed pool in southern Ash Meadows is representative of how the valley appeared before human impacts on the fragile ecosystem.

milk-vetch (*Astragalus phoenix*), Ash Meadows sunray (*Enceliopsis nudicaulis*), and Amargosa niterwort (*Nitrophila mohavensis*). At the same time, an endemic aquatic insect, the Ash Meadows naucorid (*Ambrysus amargosus*), also was proposed for listing as Endangered. (All eight proposed species were covered in BULLETIN Vol. VIII No. 11). Ash Meadows also has an extraordinarily diverse endemic freshwater mollusk fauna, including eight species that are candidates for future listing.

The Ash Meadows wetlands are fed by an aquifer consisting in part of "fossil water" that entered the underlying porous limestone more than 10,000 years ago. During the Pleistocene Epoch, an extensive system of interconnecting rivers and lakes covered the region. As the climate changed and surface waters receded, aquatic animals were left stranded in isolated springs and outflows. Adapting to their distinct "island" ecosystems, these organisms underwent rapid speciation in circumstances that some biologists describe as a landlocked Galapagos Islands.

Until recently, a real estate development company, the Preferred Equities Corporation (PEC), had plans to establish a large residential, recreational, industrial, and agricultural community on its holdings in Ash Meadows. Construction and development of the complex would have directly eliminated large sections of essential plant and animal habitat. Even worse, diversion of surface waters and excessive ground water pumping would have destroyed the wetlands system, virtually ensuring the extinction of Ash Meadows' already rare plant, fish, and invertebrate life. When conservation alternatives such as land exchanges, easements, and man-

agement agreements could not be agreed upon, The Nature Conservancy (TNC) stepped in with another approach. TNC exercised its option for a willing-seller purchase of the developers' 12,663 acres in Ash Meadows, with the understanding of Federal repurchase. The final price was \$5.5 million and a \$1 million low-interest loan. Congress has thus far appropriated \$5 million to purchase land at Ash Meadows and establish it as a national wildlife refuge.

TNC is a nonprofit, national membership organization devoted to the conservation of ecologically significant areas. The more than 700 areas it owns or manages total 400,000 acres, making up the world's largest non-government nature sanctuary system.

Two Florida Keys Mammals Proposed as Endangered

Two small mammals that are endemic to part of northern Key Largo, Florida, have been proposed for listing by the Service as Endangered species (F.R. 2/9/84). The Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*) and Key Largo woodrat (*Neotoma floridana smalli*) are in danger of extinction from destruction of their tropical hardwood hammock forest habitat for residential and commercial development. Both species were listed in fall 1983 as

continued on page 6

Two Florida Mammals

continued from page 5

Endangered under a temporary emergency rule, but this classification is due to expire on May 18, 1984. The February 9, 1984, proposed listing rule, if approved, will give these animals permanent protection under the Endangered Species Act.

Tropical hardwood hammocks are a climax vegetational type that develops a closed canopy when mature, providing a more moderate, humid environment than the surrounding habitats. They support a rich biota, including many rare plant and animal species. For example, the Schaus swallowtail butterfly (*Papilio aristodemus ponceanus*), listed by the Service as Threatened, is associated with hammocks in northern Key Largo. Eight species of native plants found in the area are listed by Florida under its own endangered species legislation. Florida also lists the cotton mouse and woodrat as endangered, but the State law does not authorize habitat protection.

Although tropical hardwood hammocks were originally found from Key West northward into southern peninsular Florida, so many have been destroyed that this is one of the most limited and threatened ecosystem types in the State. The hammocks on northern Key Largo comprise some of the largest remaining tracts. Both the Key Largo cotton mouse and woodrat are rare or absent in areas where habitat modification has occurred. Because of their dependence on undisturbed habitat, they are restricted to only 1,150 acres at the less developed northern end of the island.

Even this remaining habitat is vulnerable. A new water aqueduct to the Florida Keys is being completed, and a spur pipeline now extends into northern Key Largo. The increased availability of water is expected to accelerate the pace of residential, commercial, and recreational development. Further, the Florida Keys Electrical Cooperative has requested a Federal loan for construction of a substation to increase electrical delivery to northern Key Largo, which could hasten development even more. In order to ensure that the conservation of the Key Largo cotton mouse and woodrat would receive consideration in reaching a decision on the loan application, these small mammals were listed as Endangered under an emergency rule on September 21, 1983 (See BULLETIN Vol. VIII No. 10). Subsequently, the Service found that the proposed electrical delivery system would jeopardize the two species. However, if the habitat pro-

tection they now receive lapses, Federal agencies will no longer be required to consult with the Service on such projects in the future.

If the listing rule is approved, both the Key Largo cotton mouse and woodrat will be given permanent protection under the Endangered Species Act. Prohibitions against taking, possessing, transporting, and interstate or international trade in these species are among the conservation measures authorized by the Act. (Permits for otherwise prohibited activities are available for certain scientific, conservation, or economic hardship purposes.) Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of these mammals or adversely modify their Critical Habitat.

The proposed Critical Habitat of the Key Largo cotton mouse and woodrat consists of approximately 2,000 acres (810 hectares) of fragmented upland hardwood hammock habitat. About 850 of these acres are not currently occupied by the mammals but are considered essential for their conservation and eventual recovery. It should be emphasized that a Critical Habitat designation does not necessarily stop any particular kind of Federal activity; rather, it means that any impact of federally involved activities on listed species will be considered in the planning process. If there would be jeopardy to a species, modification of the proposed activity, not curtailment, is the usual remedy.

Snail Darter Proposed for Reclassification to Threatened

The Service has published a proposal to reclassify the snail darter (*Percina tanasi*), a small fish known only from parts of the Tennessee River drainage, from its current Endangered classification to the less restrictive category of Threatened (F.R. 2/21/84). Recent field surveys have located additional small populations of this species, and the Threatened classification is thought to more accurately reflect its true biological status. Because of habitat vulnerability, however, the Service does not believe that a complete delisting of the snail darter is warranted, and it will continue to receive protection as a Threatened species.

The snail darter was unknown until the first collection in 1973. At that time, the only known habitat for this species was a short section of the Little Tennessee River. Widespread surveys conducted by the Tennessee Valley Authority (TVA) in the 1970s did not find

any other populations. In 1976, the snail darter was listed by the Service as an Endangered Species, and 16.5 river miles of the Little Tennessee River were designated as Critical Habitat. However, in 1979, Congress exempted TVA's Little Tennessee River Tellico Reservoir Project from the provisions of the Endangered Species Act, and the species' shallow, free-flowing habitat was consequently inundated. Since the spawning and feeding areas were flooded, the population was no longer self-sustaining. Some of the fish were captured and stocked into other streams that contained similar habitat, but only the Hiwassee River introduction appears successful.

Since completion of the Tellico Project, isolated populations of the snail darter have been discovered in sections of six Tennessee River tributaries and from the main stem of the Tennessee River near the mouth of three tributaries. Unfortunately, most of these populations are extremely small and their habitat is subject to degradation from water pollution, siltation, dredging, and construction of port facilities. In 1982, the Snail Darter Recovery Team evaluated the new data and recommended that the species' biological status be recognized as Threatened. A reclassification to Threatened, instead of a complete delisting, is thought more appropriate by both the Service and the recovery team since the snail darter's habitat is still vulnerable and in need of some Federal protection. The conservation agencies of Alabama, Georgia, and Tennessee support a reclassification, as does the National Wildlife Federation.

Since there were no special rules included in the reclassification proposal, the snail darter would continue to receive generally the same protection as a Threatened species that it now receives under the Endangered classification. One exception is that a slightly broader range of permits is available for Threatened species under 50 CFR 17.32. Taking, possessing, and trafficking in this species would still be prohibited except by special permit.

Included in the reclassification proposal is a provision that would rescind the snail darter's original designated Critical Habitat in the Little Tennessee River since it has been rendered useless to the fish by the Tellico dam and reservoir. No new designations of Critical Habitat were included in the proposal since publicizing the exact locations could make this controversial species vulnerable to vandalism. Nevertheless, the snail darter's habitat would continue to receive protection under Section 7(a)(2) of the Act, which requires Federal agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of a species by directly affecting it or adversely modifying its habitat.

Comments on the proposal are invited from all interested agencies, organizations, and individuals, and are due to the Field Supervisor, Asheville Endangered Species Field Station, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 by April 23, 1984.

Hawaiian Plants

continued from page 1

could wipe out the *Schiedea* and damage the *Bidens* population. Another constant threat to both taxa, as well as much of Hawai'i's other native flora, is competition from aggressive exotic

vegetation. The vulnerability of both plants is magnified by their extremely low numbers; a recent estimate put the *Bidens cuneata* population at only 10 mature plants, and the *Schiedea adamantis* level only slightly higher at 78.

Both species were proposed a second time for listing as Endangered on August 23, 1982. (For a summary of Service efforts since 1976 to conserve these plants, see the *Federal Register* notice or BULLETIN Vol. VII No. 9.) Comments received from the Governor of Hawai'i and several local offices of Federal agencies were all in favor of the listing proposal.

As listed species, *Bidens cuneata* and *Schiedea adamantis* now receive protection under the Endangered Species Act. Among the protective measures

provided under the Act are prohibitions on transporting and interstate or international trade in these plants. A recovery plan will be developed for both species, and funding could be allocated under Section 6 of the Act for State conservation efforts. A formal designation of Critical Habitat was not included in the listing rule because publicizing the exact locations of the populations could make them more vulnerable to vandalism and accidental habitat damage by curiosity seekers. Nevertheless, both species are covered under Section 7 of the Act. All Federal agencies must ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the two species by directly affecting the plants or by adversely modifying their habitat.

CITES News

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora

(CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these

species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Final Export Rules on Certain Appendix II Species

Exports of wildlife and plants listed under Appendix II of CITES may occur only if the country of origin has issued an export document. Two new multi-year export rules on certain Appendix II species in the United States have been published.

A final rule approving the export of American alligators (*Alligator mississippiensis*) lawfully taken in Louisiana and Florida during the 1983-85 seasons was published by the Service in the January 9, 1984, *Federal Register*. This decision was based on the findings by the U.S. CITES Scientific and Management Authorities that such alligator exports will not be detrimental to the survival of the species in either State. Formerly, such findings and rules were developed on a year-to-year basis covering single harvest seasons.

The Service will continue to monitor the status of the American alligator populations in Louisiana and Florida, and will regulate trade in products derived from legally taken animals through tagging of hides and documentation of shipments. General approval for alligator exports from any other States is not granted under the January 9, 1984, rule.

In a *Federal Register* notice published on January 5, 1984, the Service

announced a final rule approving exports of the bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), and river otter (*Lutra canadensis*) legally taken during the 1983-84 seasons from specific United States populations, along with the gray wolf (*Canis lupus*) and brown or grizzly bear (*Ursus arctos*) from Alaskan populations only. Exports from certain States that met Scientific and Management Authority criteria were found to be not detrimental to the survival of the species in these respective States. Compliance with State documentation and CITES tagging requirements will continue to be enforced for exports of these species.

For further information on the States and species involved, consult the January 5, 1984, *Federal Register*.

CITES export documents issued by the Federal Wildlife Permit Office are required to export any CITES species from the United States. Further, CITES documents are required from the country of origin in order to import any CITES species into the United States. For further information, contact the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, P.O. Box 3654, Arlington, Virginia 22203 (telephone 703/235-1903).

Comments Requested on CITES Amendments

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates trade in certain wild animal and plant species, which are listed in appendices to this treaty. Any nation that is a Party to CITES may propose amendments to Appendices I and II for consideration by the other Parties.

The Service has announced plans to develop proposals to amend Appendices I and II for the United States. Comments from the public on animal or plant species that should be considered as candidates for U.S. proposals are invited. Such proposals may concern the addition of species to Appendix I or II, the transfer of species from one appendix to another, or the removal of species from Appendix I or II. The Service will consider all information and comments received by June 1, 1984, in determining whether it should develop proposals on particular species. Please send correspondence to the Office of Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240. Copies of the current CITES appendices are available from the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Alligator Snapping Turtle

continued from page 3

almost 300 pounds with a carapace (shell) length of 80 cm. This species can be distinguished from other snapping turtles by its size, its wedge-shaped head, and the three prominent ridges that extend down the carapace. Alligator snapping turtles are fish-eating ambush predators; a turtle will sit in wait, luring its prey by mimicking a worm with its long tongue.

The species' range extends down the Mississippi River drainage from Iowa, Illinois, and Kansas south to the Gulf of Mexico, and from Texas east to northern Florida. Because of its large range and very secretive behavior, its status is not well known, but there is concern that habitat destruction and overcollecting for human consumption may be having an impact on some populations. The Service has been concerned about the status of the alligator snapping turtle for some time, and the species was included in the Review of Vertebrate Wildlife for Listing as Endangered or Threatened Species (F.R. 12/30/82). Although the information gathered by the Service in response to the vertebrate notice of review and Dr. Pritchard's petition is not sufficient to propose the alligator snapping turtle for listing at this time, the Service will continue to monitor its status.

Guadalupe Fur Seal Petitioned for Listing

The National Marine Fisheries Service (Department of Commerce), which has management jurisdiction over most

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	19	233	3	0	22	292	19
Birds	52	14	144	3	0	0	213	42
Reptiles	8	6	60	8	4	13	99	6
Amphibians	5	0	8	3	0	0	16	4
Fishes	30	3	11	12	1	0	57	23
Snails	3	0	1	5	0	0	9	5
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	3
Plants	58	3	0	9	2	2	74	10
TOTAL	202	45	449	48	9	37	801	124**

* Separate populations of species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard

** More than one species may be covered by some plans

Number of Recovery Plans approved: 110

Number of species currently proposed for listing: 22 animals
23 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 38 fish & wildlife
12 plants

February 29, 1984

marine mammals, including those that are Endangered or Threatened, has been petitioned to list the Guadalupe fur seal (*Arctocephalus townsendi*) as an Endangered species (F.R. 2/8/84). Since the petition from Mr. Richard T. Tinney, Jr., of the Center for Environmental Education's Seal Rescue Fund, was judged to contain substantial scientific information indicating that the action may be warranted, a status review was initiated. Comments and scientific data on this seal's status are due to the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C. 20235 by April 9, 1984.

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

March 1984

Vol. IX No. 3

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

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Arctic Peregrine Falcon Reclassified to Threatened

The Service has published a final rule (F.R. 3/20/84) that reclassifies the Arctic peregrine falcon (*Falco peregrinus tundrius*) under the Endangered Species Act from Endangered to Threatened. This reclassification does not significantly change the protection of the subspecies under the Act; it was taken only to ensure that this bird's current biological status is reflected accurately on the U.S. List of Endangered and Threatened Species, as required by law. Another part of the rule clarifies the legal status of peregrines that nest in western Washington. Finally, it gives added protection to all free-flying peregrines in the conterminous 48 States, under the classification of "Endangered due to Similarity of Appearance," in order to facilitate enforcement of conservation rules for the listed forms.

Background

The peregrine falcon (*Falco peregrinus*) is found widely throughout the world, and three subspecies occur in North America: the Arctic, American (*F. p. anatum*), and Peale's (*F. p. pealei*). The Arctic and American subspecies were listed in 1970 as Endangered after contamination of their food supply by DDT and its metabolites. These pesticides interfered with peregrine reproduction and caused severe depletions in population numbers.

With the subsequent decline in DDT usage within the U.S. and Canada, the reproductive rates for Arctic peregrines have shown enough improvement that this subspecies is no longer in imminent danger of extinction. From all available evidence, the Service concludes that

there are no fewer than 3,000 pairs occupying the Arctic and sub-Arctic areas of North America. Blood samples collected from Arctic peregrines trapped during migration indicate that about 90 percent of these birds are now capable of normal reproduction. But although the status of the Arctic peregrine has improved enough for a reclassification from Endangered to Threatened, it is not completely secure. Current populations are almost certainly lower than those known prior to the use of DDT (pre-1945). There also is a continuing threat from the use of DDT (and possibly other environmental contaminants) throughout peregrine wintering grounds in Central and South America. Until that danger is clearly removed, both the Arctic and American

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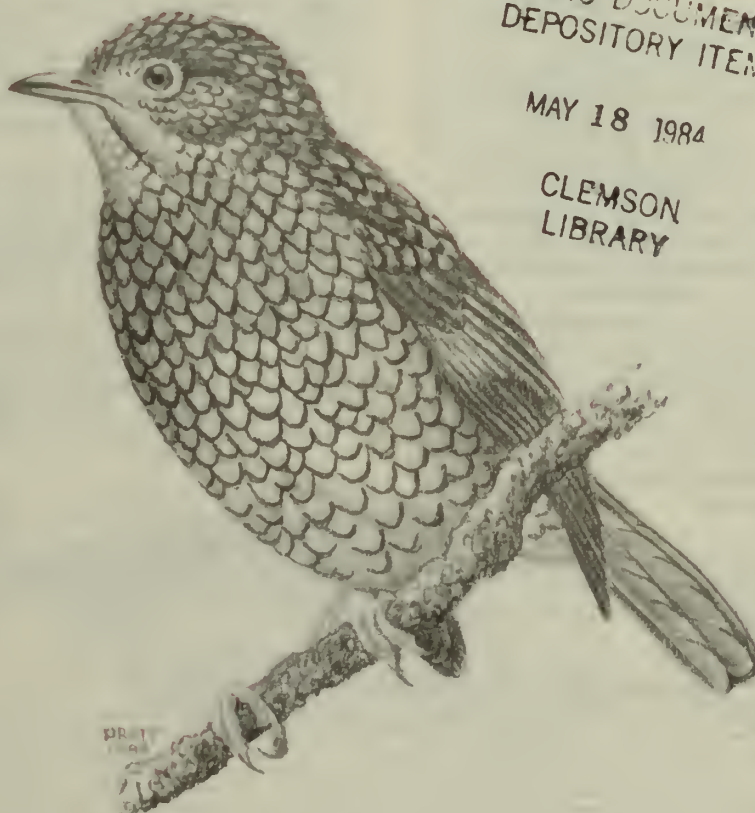
Recovery Plans Approved for Hawaiian Wildlife

As part of the BULLETIN's continuing series on recovery plans for Threatened and Endangered wildlife and plants of the U.S., this month's issue looks at three more plans that have been approved within the past year for nine Hawaiian animals:

Six Kaua'i Forest Birds

Within historical times, the avifauna of the Hawaiian Islands has suffered a severe decline. Birds in the order Passeriformes (song birds) have been particularly hard hit; of the 57 endemic passerines (species and subspecies), 20 are now extinct and another 22 are on the U.S. List of Endangered and Threatened Wildlife and Plants. The Island of Kaua'i is home to 13 of the surviving native passerines, more than any other island in the archipelago. Unfortunately, six of these birds have become Endangered due to habitat destruction and introductions of exotic plants, animals, and diseases. A recovery plan approved last summer could help in the effort to conserve these taxa:

continued on page 4

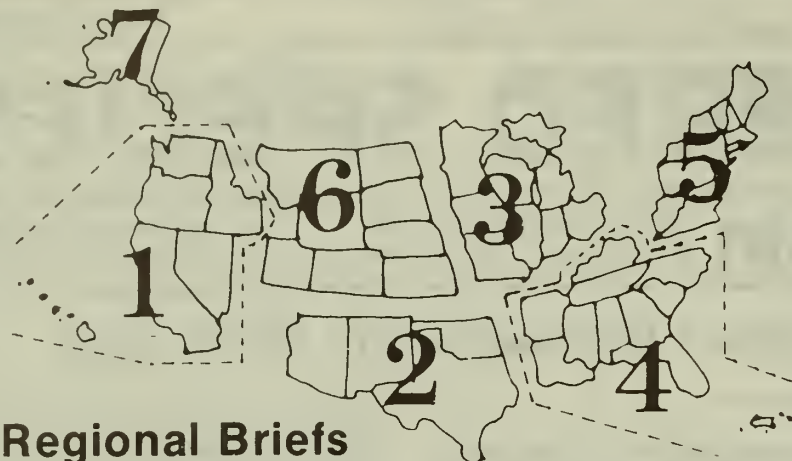


puaoihi, or small Kaua'i thrush

PUBLIC DOCUMENTS
DEPOSITORY ITEM

MAY 18 1984

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Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of March:

Region 1—The U.S. Air Force (USAF) had proposed to clear a portion of Andersen Air Force Base on Guam that has been identified by the Guam Division of Aquatic and Wildlife Resources (GDAWR) as one of the few remaining places harboring the Guam rail (*Rallus*

owstoni), which has been proposed for listing as an Endangered species. Under a listing proposal, the USAF would have only been required to informally "confer" on actions that may affect the species; however, on April 11, an emergency listing of the bird as Endangered was published. (A story on the listing will appear in the May BULLETIN.) The USAF will now be required to formally

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consult on any actions that may affect the rail. The USAF has suspended the clearing operation pending consultation on how best to improve base security while conserving the rail; meanwhile, the Defense Department has assured us that it will take no action that would harm the birds.

Endangered species biologists with the FWS Reno Office visited Ash Meadows on two occasions last month in an attempt to remove introduced goldfish (*Crassius auratus*) from pools at the Point of Rocks Springs. Despite the use of a variety of techniques, the efforts were unsuccessful. Unless removed soon, the goldfish will invade other habitats occupied by the Endangered Ash Meadows Amargosa pupfish (*Cyprinodon nevadensis mionectes*) and Ash Meadows speckled dace (*Rhinichthys osculus nevadensis*). Goldfish have been present in the Point of Rocks Springs since autumn 1983. This introduction is further evidence that public access into the Ash Meadows area must be managed.

Biologists from the Great Basin Complex met with refuge and regional office personnel to discuss stream habitat improvements on the Moapa National Wildlife Refuge. This southern Nevada refuge was established in 1979 for the conservation of Moapa dace (*Moapa coriacea*) and consisted of 12 acres with three primary spring heads discharging into a single stream. The stream was renovated and stocked with Moapa dace in 1981. In November 1983, an additional 20 acres with four spring heads were purchased. The more recently acquired stream will need thinning of its riparian canopy and addition of gravel substrate in order to renovate the habitat. These activities will enhance production of insects, the dace's primary food source. It was also agreed that additional habitat should be created at the northeastern refuge boundary where water temperatures are lowest and dissolved oxygen is highest. Closer to the spring heads, temperatures are warm (31.4°C) and dissolved oxygen extremely low (2.5-4.0 mg/l), conditions that limit successful recruitment.

Special Agents (SA) of the FWS Law Enforcement Office in Klamath Falls, Oregon, have investigated the deaths or injuries of 15 bald eagles (*Haliaeetus leucocephalus*). All dead birds were submitted to the FWS National Wildlife Health Laboratory in Madison, Wisconsin, for necropsy. Reports on the first 10 showed the causes of death or injury as follows: electrocution, four dead and

continued on page 10

Peregrine

continued from page 1

peregrines will remain on the List of Endangered and Threatened Species.

The Peale's peregrine falcon, which nests from the Aleutian Islands east and south to Vancouver Island, was not seriously affected by DDT contamination and therefore was never listed under the Endangered Species Act. A few peregrines nest on Washington's Olympic Peninsula, just to the south of Vancouver Island, and there has been some disagreement among ornithologists over whether these birds are actually Peale's or American peregrine falcons. Therefore, the second part of the March 20, 1984, rule was a determination by the Service that these birds are indeed members of the Endangered American subspecies and are covered by the conservation provisions of the Act. If they had been found to be Peale's peregrines, they would not have had legal protection under the Act. The State of Washington already lists all peregrine falcons within its borders as endangered, and prohibits any taking except under strict permit.

Because different peregrine subspecies are difficult to distinguish and sometimes intergrade at the boundaries of their ranges, the March 20, 1984, rule also reclassified all free-flying peregrines in the 48 conterminous States as Endangered under the Similarity of Appearance clause [Section 4(e)] of the Endangered Species Act. This classification conveys the full protection authorized by the Act. By removing doubts about which birds are covered by the Act and by making enforcement more efficient, all peregrines should benefit, including those birds released into the wild under the peregrine restoration program.

The reclassification rule was proposed by the Service in the March 1, 1983, *Federal Register* (see BULLETIN, Vol. VIII No 4.). Some 71 comments were received, two-thirds of them supporting the action. These comments, along with the Service's responses, are summarized in the March 20, 1984, final rule.

Effects of the Rule

Under the Threatened classification, the Arctic peregrine falcon has virtually the same protection it received under its former Endangered status. (There is a minor change in applications for take of peregrines on the Alaskan North Slope for scientific or conservation purposes, in accordance with 50 CFR 17.32.) Except where authorized by permit, taking, possessing, transporting, and trading in listed peregrines remains prohibited. Federal agencies will still be

required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the listed peregrines or adversely modify their habitat. Except for the permit change mentioned above, all of these conservation measures also apply to any free-flying peregrine in the conterminous 48 states.

The Service does not intend to allow the take of wild American or Arctic peregrines for the purposes of falconry until these subspecies have recovered and are removed from the List of Endangered and Threatened Species. No changes have been made in existing Federal falconry regulations, and rules implementing the Migratory Bird Treaty Act will not be affected. Further, all peregrine falcons remain on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and are subject to the treaty's permit procedures.

Owens Tui Chub Proposed as Endangered

The Owens tui chub (*Gila bicolor snyderi*), a small California fish that is jeopardized by habitat degradation and introductions of exotic fishes, has been proposed by the Service for listing as Endangered (F.R. 3/28/84). During the 1930s, ichthyologist Carl Hubbs and his coworkers conducted the first major survey of fishes in the arid Owens Basin (Inyo and Mono Counties, California). Owens tui chubs were found to be common in a wide range of aquatic habitats. Unfortunately, this vulnerable subspecies has suffered a serious decline, and pure populations can be found at only two locations.

Demand for the limited water resources of the Owens Basin is high, and they are used extensively for irriga-

tion and municipal purposes. The largest consumer of Owens Basin water is the city of Los Angeles, approximately 260 miles away, which takes in the water through an extensive system of diversion structures and aqueducts. Physical habitat alterations associated with impoundments and stream diversions have reduced the chub's available habitat.

Exotic fishes currently are the main threat to the remaining two populations of this subspecies. The Owens tui chub is one of only four fishes native to the Owens River, but 18 exotic fishes have been introduced into the ecosystem. Predation by exotic brown trout (*Salmo trutta*) is a problem for the Owens tui chubs below Long Valley Dam, one of the two remaining populations. Another threat is hybridization with the Lahontan tui chub (*G. b. obesa*), a related but non-native fish that has been illegally introduced into many waters of the Owens Basin for use as a bait fish.

The status of the Owens tui chub is recognized by California under its own endangered species legislation, although the State lacks authority to protect habitat. U.S. Fish and Wildlife Service interest in this subspecies was first expressed in the December 30, 1982, *Review of Vertebrate Wildlife for Listing as Endangered or Threatened*. On April 12, 1983, the Service was petitioned by the Desert Fishes Council to list the Owens tui chub, and the Service subsequently published an announcement that the petitioned action was warranted (F.R. 6/14/83).

If the listing proposal is approved, the Owens tui chub will receive all of the protection authorized under the Endangered Species Act, which includes general prohibitions against taking, possessing, transporting, and trading in listed species. Permits to conduct otherwise prohibited activities are available for certain scientific and conservation purposes. Under Section 7 of the Act, Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the fish or adversely modify its Critical Habitat.

continued on page 12



An Owens tui chub can reach up to 5 inches in length. Its coloration is olive above and whitish below, with lateral blue and gold reflections; the sides of the head also display a noticeable gold tinge.

From a photo by E. Philip Pister

Hawaiian Recovery Plans

continued from page 1

• **pualohi, or small Kaua'i thrush (*Phaeornis palmeri*)**—The *puaiohi* is about 7 inches long, dark brown above, gray below, and with a white eye ring. It forages for insects along fern and sedge-covered stream banks in 'ohi'a forests. This species was relatively numerous around the turn of the century, but it is now extremely rare. The 1968-1973 estimate was 250 or fewer birds.

• **kama'o, or large Kaua'i thrush (*Phaeornis obscurus myadestina*)**—This thrush reaches a body length of up to 8 inches, and is colored a dull brown above, light gray below. Nests were just recently discovered and were constructed in cavities of 'ohi'a (*Metrosideros collina*) trees. Its diet consists primarily of fruit and berries. In 1891, the *kama'o* was the most common forest bird on Kaua'i, but the forest bird surveys conducted during 1968-1973 resulted in an estimate of only about 300 or fewer remaining.

• **Kaua'i 'o'o (*Moho braccatus*)**—This bird is a bit larger (up to 8.5 inches) and darker in coloration than the other Kaua'i forest birds. The black upper body and brown abdomen contrast with bright yellow thigh feathers. In behavior, the 'o'o is continually on the move and defending its feeding territory from other birds. It feeds on the nectar of 'ohi'a and lobelia flowers, and hunts spiders, moths, and crickets. The most recent nest known (1973) was in an 'ohi'a cavity. Although common in 1891, the 1968-1973 estimate was that fewer than 100 were left. During a 1981 survey, only two 'o'o were sighted.

• **Kaua'i 'akialoa (*Hemignathus procerus*)**—This bird might already be extinct; none were seen during the 1968-1973 surveys. Recorded sizes for the 'akialoa average almost 8 inches. Male birds are bright olive-yellow above and yellow below, with a distinctive eye stripe, and they have a downward curving bill reaching up to 2.5 inches long. Females are somewhat duller in color with shorter bills. The 'akialoa feeds primarily on 'ohi'a and lobelia nectar, although some insects are taken.

• **Kaua'i nuku-pu'u (*H. lucidus hanapepe*)**—This bird was already very rare by 1889, and there have been very few sightings in recent years. It is slightly smaller than the other Endangered Kaua'i forest birds, about 5.5 inches in length. The male birds have a bright yellow head, throat, and breast, and females are olive-gray above. They glean caterpillars and other insects from tree bark, and might also feed on nectar.



Kaua'i 'o'o



Kaua'i nuku-pu'u

Illustration by H. Douglas Pratt

Illustration by H. Douglas Pratt



O'u

• **'o'u (*Psittirostra psittacea*)**—The 'o'u is the only bird covered in this recovery plan that still occurs on Kaua'i and one other island. Historically, it was distributed throughout six of the main Hawaiian Islands, and was considered extremely common. Today, however, only remnant populations are found on Kaua'i (Alaka'i Swamp) and the windward slopes of the island of Hawai'i. Males have a bright yellow head that contrasts sharply with their green and brown body; females are more olive in color and lack the distinctive yellow head feathers. Their diet includes 'ie'ie (*Freytinia arborea*) fruits and flowers, 'ohi'a buds and flowers, and caterpillars.

Alteration and destruction of the original lower elevation forests, which were important habitat for these Endangered birds, occurred quickly and extensively. The process began when early Polynesians discovered and settled the islands about 1,200 years ago, and it accelerated rapidly following the arrival of Captain Cook in 1778. As new settlers arrived, large areas of forest land were cleared for pastures and crop plants. Overgrazing by feral livestock, particularly cattle and goats, caused widespread erosion and heavily disturbed the native forest ecosystems. Many species of aggressive exotic plants also have been introduced, competing with natural vegetation upon which the endemic birds depend for food and nesting. Although Kaua'i is the fourth largest of

the Hawaiian Islands, totalling 553 square miles, only 40,000 acres of native forest in the higher elevations and remote interior valleys have so far escaped heavy modification.

Predation by introduced rats and cats on Kaua'i probably had, and continues to have, significance in the decline of native birds. The black rat (*Rattus rattus*), for example, can be found on almost every forested mountain on the island, and is fully capable of climbing trees in search of eggs and young birds. A destructive predator on other Hawaiian islands, the mongoose (*Herpestes auropunctatus*), possibly has become established on Kaua'i; if not, it is probably only a matter of time before an accidental introduction. Kaua'i, the only one of the major Hawaiian Islands to have avoided infestation by the mongoose for this long, is also the only one that has not lost one of its native birds to extinction (assuming that the Kaua'i 'akialoa survives).

Competition with exotic birds for food and living space has been another problem. There were major introductions of various songbirds from around the world from 1865 through at least the first three decades of this century, and it was during 1900-1930 that the heaviest decline in Kaua'i's native forest birds was recorded.

It is likely that imported songbirds, game birds, and even poultry introduced new diseases and parasites that infected native Hawaiian birds. Two other diseases, avian pox (*Poxvirus avium*) and

avian malaria (*Plasmodium* spp.), might have been present already in the islands, but later transmitted more widely by introduced birds and mosquitos. Threats to the Endangered forest birds in their high retreats could intensify if the temperate-zone subspecies of the night mosquito (*Culex pipiens pipiens*), a major disease vector, becomes established in upper elevations.

The best remaining habitat for Kaua'i's Endangered forest birds is the Alaka'i Swamp, a montane rain forest on a deeply dissected plateau about 4,000 feet in elevation. At the southeast corner of the swamp is Mt. Wai'ale'ale, which receives an average annual rainfall of 486 inches and is often cited as the rainiest spot on earth. Within the Alaka'i Swamp, the heaviest rainfall is 150-200 inches per year on the east side, dropping to 50 inches on the west side next to Waimea Canyon. Most recent observations of the Endangered forest birds were within the area of heavier rainfall in relatively pristine habitat.

In 1964, the State of Hawai'i established the 9,939-acre Alaka'i Wilderness Preserve to conserve the swamp's native fauna and flora. This preserve includes the primary habitat of the Endangered forest birds, and is the focus of research on how to conserve these species. Attempts by the State to control the spread of exotic pest plants into the Alaka'i Swamp have been made at certain trail heads. The U.S. Forest Service (USFS) has initiated studies looking into the possible use of biological control of undesirable introduced plants. From 1978-1982, the USFS also studied sections of the Alaka'i Swamp to determine avian food supplies, phenology, and relationships to native bird populations. During 1968-1973, the U.S. Fish and Wildlife Service (FWS) conducted single-person surveys of the status and distribution of Kaua'i's forest birds. In 1981, an intensive multiple-person follow-up survey of the Kaua'i forest birds was carried out by the FWS, USFS, and Hawai'i Department of Land and Natural Resources. Activities included in the various surveys have been bird banding, collection of blood samples, habitat evaluation and mapping, and testing of artificial nesting structures.

Recovery Actions

The *Kaua'i Forest Birds Recovery Plan*, prepared by the FWS in cooperation with the Hawai'i Division of Forestry and Wildlife, was approved in July 1983. Its first objective is, necessarily, to halt the trend toward extinction of the six Endangered birds; the next step is to increase the population of each species to 1,000 birds in secure habitat, whereupon they can be considered for reclassification to Threatened. A population of 1,000 birds would represent up to a 10-

fold increase, depending on the species, over current levels and indicate that management is becoming effective.

The plan identifies an area of approximately 19,500 acres in the Alaka'i Swamp that is essential to the survival and ultimate recovery of the forest birds. Most of this land is already under the control of the Hawai'i Division of Forestry and Wildlife, including the 9,939 acres protected by the special regulations governing the Alaka'i Wilderness Preserve. Broad-scale efforts to reduce rat populations and eliminate any feral cats in the swamp, especially around bird nesting sites as they are discovered, could help to control the predation problem. Every effort should be made to prevent the mongoose and any other predators from becoming established on the island. Although existing hunting regulations appear adequate to contain habitat degradation caused by feral livestock animals in much of the swamp, goats seem to be increasing in the important Wainiha Pali section. The plan advocates periodic control efforts or increased hunting of the animals to conserve this vital habitat. Biological and/or mechanical methods to control exotic pest plants in the Alaka'i Swamp could be used, if feasible and without risk to native species.

Due to the flourishing aviary trade in Hawai'i, importation of exotic birds continues, and some could prove to be new predators, competitors, or disease vectors. The plan calls for stricter quarantine laws and better enforcement of laws against smuggling exotics. More complete screening and spraying of incoming aircraft and ships could help prevent the introduction of new mosquito species. As research identifies specific hosts of avian diseases, control methods should be evaluated and applied where possible.

As the plan points out, some or all of the six Endangered birds could easily become extinct before studies to better determine the importance of various limiting factors are complete, or before corrective management actions are developed and applied. To ensure their survival, the recovery plan recommends immediate initiation of a captive propagation and sperm bank program. The Honolulu Zoo has expressed interest in a propagation program, and the FWS Patuxent Wildlife Research Center might be able to provide support. If this approach is approved, techniques will first be attempted on related, but less jeopardized, surrogate species. For the rarest birds, artificial manipulation of nesting biology to increase production, using such methods as building artificial nesting structures or double-clutching the eggs, might initially be less hazardous than captive propagation. The ultimate goal is to build up large enough flocks in captivity so that offspring can



'a'o, or Newell's Townsend's shearwater

be released into secure natural habitat to supplement any remaining wild populations.

Two Hawaiian Seabirds

Another recovery plan approved last year addresses two of Hawai'i's native seabirds. Both have been seriously reduced in range and numbers, primarily due to predation by exotic animals. Avian diseases, habitat alteration, and even artificial lighting are noted in the plan as limiting factors for one or both of these birds:

- **'ua'u, or Hawaiian dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*)**—This subspecies of petrel is typically about 16 inches in length, with a wingspan of almost 36 inches. Its flight is characterized by high, steeply banked arcs and glides. The colonial, burrow nesting 'ua'u historically bred on most of the main Hawaiian Islands, but confirmed populations currently are known only on Maui (Haleakala Crater) and upper elevations on the island of Hawai'i. There is some evidence to indicate the existence of remnant populations on several other islands. The 'ua'u is listed as Endangered.

- **'a'o, or Newell's Townsend's (formerly Manx) shearwater (*Puffinus auricularis* (formerly *puffinus*) *newelli*)**—This subspecies averages about 13 inches in length, with a wingspan of 30-35 inches. It is glossy black above, white below. The 'a'o is another burrow nester, and has well-developed claws for excavating and climbing. Burrows for both birds are generally 3 to 6 feet deep, but occasion-

ally some 15 feet long are found. Nesting colonies are restricted to steep, forested mountain areas on Kaua'i and possibly remote sections of several other islands. The 'a'o is listed as Threatened.

The single greatest limiting factor for both the 'ua'u and 'a'o, and for many other Hawaiian birds, is predation by exotic animals. Early settlers from Polynesia themselves may have consumed some birds and eggs, and they brought with them such predators as rats and feral pigs. Later settlers helped establish other species of rats, the mongoose, feral cats and dogs, and more livestock, with a devastating effect on the ground nesting birds. For example, early descriptions of 'ua'u nesting areas indicated that burrows typically were found between 1,500-5,000 feet in elevation; known sites today, however, are restricted to levels above 7,200 feet, which is probably the upper limit of most dense populations of predators.

Another serious limiting factor to the 'a'o, and potentially for the 'ua'u, is urbanization and the accompanying increase in artificial lighting. Street lights, resort security lights, and athletic field lights have resulted in substantial problems for 'a'o fledglings during their first flights from their nesting grounds to the ocean. Both the 'a'o and 'ua'u normally fly to and from their ocean feeding areas only at night. The young have an apparently natural attraction to light, possibly related to the bioluminescence of their pelagic food supply or a tendency to use reflected moonlight on the water's surface to find the ocean. When attracted to artificial light, fledglings

become confused and often strike various obstructions on land. ('A'o adults, being more experienced, are less attracted to artificial light sources.) Most fallen birds at first are only stunned, but while on the ground they can be hit by automobiles, killed by dogs and cats, and simply unable to become airborne again. The fall-out problem is greatest during poor weather when there is little or no visible moonlight. From 1978 to 1981, 5,528 fallen 'a'o were found on Kaua'i. An annual, publicly supported salvage effort to pick up and release fallen birds has been successful; without it, much of the annual recruitment would be lost.

Damage to nesting habitat could be limiting the remaining populations of both birds. Most of their remaining habitat is on steep slopes at high altitudes, and has so far escaped urbanization. However, military and civilian communication installations, commonly located

on mountainous ridgetops, could directly affect the habitat, increase artificial light, and add to fire hazards.

'A'o nesting colonies are associated with dense stands of *uluhe* (*Dicranopteris linearis*) and similar ferns. This vegetation provides some cover from predators and helps to stabilize the slopes, but it also makes nesting sites particularly susceptible to damage by forest fires. The 'ua'u historically might have nested in denser vegetation at lower elevations, but now it is restricted to higher areas with only sparse plant cover.

Pelagic habitat is where the 'a'o and 'ua'u spend more of their lives, but very little is known about it. Breeding adults apparently stay near the main Hawaiian Islands during nesting season, but they could be ranging far at other times. Their diet includes small fishes, crustaceans, and squid. Concerns have been raised about potential future threats to the food supply from toxic waste dumping and other sources of pollution.

Early Conservation Efforts

Predator control around 'ua'u nesting colonies within Haleakala National Park began in 1966, with noticeable results, and trapping has continued since then. A number of studies have been conducted on 'ua'u at the park since the 1960s to locate and map nesting sites, determine population status, assess the effects of predation, and investigate breeding biology.

During the 1960s, the impact of artificial lighting on 'a'o fledglings on Kaua'i became apparent, and efforts to salvage fallen birds were initiated. In 1978, the 'a'o "aid station" program began on Kaua'i. Local agencies, organizations, and citizens participated in gathering fallen birds, which were taken to stations operated by State and Federal wildlife personnel. Each healthy bird was measured, banded, and released. In 1979, two aid stations were set up on Maui, but only a few 'a'o and 'ua'u have been recovered. The actual survival rate of salvaged birds is not known, but it is almost certainly higher than if they were left where fallen.

An FWS-sponsored light attraction study in 1980 found that installing metal shields around hotel flood lights to eliminate upward glare significantly reduced 'a'o fall-out. In 1982, The Nature Conservancy (TNC) purchased shades for 14 streetlights in an area of heavy fall-out. (TNC is also managing a privately owned 'a'o nesting area of 213 acres on Kaua'i.) John Sincock, of the FWS Lihue (Kaua'i) Field Office, has been involved for some time in discussions with State, county, and utility officials regarding possible streetlight shielding in other critical fall-out areas. Last year, a coop-

erative agreement between the FWS and the Citizens Utilities Company of Kaua'i was developed, under which the power company will purchase, install, and maintain \$21,000 worth of streetlight shades.

In 1978, a cooperative study was initiated by the FWS and the Hawai'i Division of Fish and Game to establish an experimental 'a'o colony at Kilauea Point and the nearby Moku'ae'ae Islet on Kaua'i's north shore. 'A'o eggs were removed from some of their natural burrows in the mountains and transferred to the nearshore burrows of a similar species, the wedge-tailed shearwater (*Puffinus pacificus chlororhynchus*). In most places, the surrogate adults accepted the eggs, and from the 91 'a'o eggs transferred during 1978-1980, 67 chicks fledged. Because of serious predation at Moku'ae'ae by exotic mynah birds (*Acridotheres tristis*) in 1979, all eggs subsequently transferred went only to Kilauea Point, where a mynah control effort was successful in reducing the problem. The intent of the experiment is to see if the cross-fostered 'a'o will return to nest where they fledged. To date, no returning birds have been found at the transplant sites. Depending on the results, a similar program for the 'ua'u might be considered.

Further Recovery Activities

The *Hawaiian Dark-rumped Petrel* ('A'o) and *Newell's Manx Shearwater* ('A'o) *Recovery Plan* was prepared by the FWS and the Hawai'i Division of Forestry and Wildlife, and approved in April 1983. Quantifiable recovery goals were difficult to establish because of the incomplete knowledge of these two birds. However, progress toward recovery will require accomplishing the following interim objectives:

- 1) reducing the current annual fall-out of more than 1,000 'a'o to less than 100 (or near 0); reducing annual 'ua'u fall-out to near 0,
- 2) providing long-term protection for the eight known 'a'o nesting colonies on Kaua'i and the one known 'ua'u nesting colony on Maui; and
- 3) developing efficient predator control methods for use in and around isolated nesting sites.

When these three objectives are met, the 'ua'u could be considered for reclassification to Threatened and the 'a'o for delisting.

The annual 'a'o salvage effort will likely be needed indefinitely, unless very effective light abatement methods can be found, because of increasing urbanization. An effort will be made to inform developers about the fall-out problem during the initial planning phases of new construction so that light shields or other devices can be incorporated into



Illustration by H. Douglas Pratt

'ua'u, or Hawaiian dark-rumped petrel

project designs. The plan also calls for research on other potential methods of controlling the fall-out problem, such as changing the frequency of the light being used to a part of the spectrum less disruptive to the birds.

Existing nesting areas, some of which have not yet been located, should be mapped and essential habitat identified. Better knowledge of the habitat can make the use of conservation zoning regulations more successful. Since most of the known nesting habitat is on government-managed land, the recovery plan does not call for habitat acquisition at this time. It does recommend additional efforts toward establishing new nesting colonies on habitat that is already secure. Maintaining natural vegetation around burrows will be part of the over-all program. None of these recovery activities will be successful over the long term without effective predator control. Such methods as increased hunting of feral livestock, fencing of essential habitat, and the use of toxicants (if it can be done without risk to native species) are mentioned in the plan as possibilities. In the meantime, all possible steps should be taken to prevent the introduction and spread of new predators (as well as the importation of noxious vegetation).

Hawaiian Monk Seal

The Hawaiian monk seal (*Monachus schauinslandi*) is a member of what may be the most primitive living genus of all seals. Its progenitors apparently originated in the North Atlantic, dispersed widely, and eventually became separated in three different regions of the world. Over millions of years, distinct species evolved: the Hawaiian, Mediterranean (*Monachus monachus*), and Caribbean or West Indian (*Monachus tropicalis*) monk seals. Monk seals appear to be far more sensitive to human intrusion into their environment than most other species of seals. As human presence and activities spread into the most isolated parts of their habitat, all three species suffered dramatic population declines. Remnant populations of both the Hawaiian and Mediterranean monk seals are listed as Endangered; the Caribbean monk seal has the same classification, but it probably became extinct several decades ago.

The Hawaiian monk seal currently is found throughout the Northwestern Hawaiian Islands, a chain of coral atolls and small islands, most of which are uninhabited. They make up only about 3,430 acres of emergent habitat. Monk seal breeding groups have been known to occur at eight places in the archipelago: Kure Atoll, at the northwestern end of the chain; the Midway Islands; Pearl and Hermes Reef; Lisianski Island; Laysan Island; French Frigate Shoals;



Photo by Doris Alcorn

Until their first molt, Hawaiian monk seal pups have a darker pelage than the older seals.



Photo by Doris Alcorn

Adult male seal approaching an unreceptive female

Necker Island; and Nihoa Island, a small remnant volcanic peak about 1,840 km from Kure and the last point of land before meeting the much larger island of Kaua'i. (Infrequent monk seal sightings also have been reported from waters surrounding the main Hawaiian Islands.)

On land, monk seals seek out undisturbed sites where they can haul out to rest, give birth, and nurse their young. These areas are usually undisturbed sandy beaches that are protected by shallow reefs, although basaltic intertidal benches are sometimes used. Monk seals also make use of vegetation behind the beaches, when available, for

resting at night and for shelter from wind and rain. Shallow inner reef waters adjacent to the islands are critical to weaned pups learning to feed. Mature seals also feed in these shallows, as well as in deeper waters away from the islands. They consume spiny lobsters, octopi, eels, and various reef fishes.

Significant human impacts on Hawaiian monk seals were felt early. Beginning in 1837, a series of shipwrecks on Kure Atoll's reefs stranded crews that came to rely on monk seals as a major food source. Shipwrecks also occurred on other islands in the northwestern chain, with similar results. A number of expeditions were sent to the

Northwestern Hawaiian Islands during the 19th and early 20th centuries for commercial exploitation of monk seal fur and oil, green sea turtles (*Chelonia mydas*), sharks and other fish, beche-de-mer, and guano. The huge seabird populations present on many of the islands also faced intensive pressure from traders in down, feathers, and bird skins. In 1909, President Theodore Roosevelt moved to conserve the birds by creating the Hawaiian Islands Reservation (since 1940, the Hawaiian Islands National Wildlife Refuge). By restricting human access to most of the islands, this action gave some protection to monk seals as well as sea birds. Nevertheless, the closure was difficult to enforce, and Japanese feather poachers continued to raid the islands until at least 1915, killing large numbers of birds and undoubtedly disturbing seals.

Several of the Northwestern Hawaiian Islands have been modified and developed for human occupation, a presence that has resulted in further disturbance of seals and other wildlife. For example, since their discovery in 1859, the Midway Islands have been used for various purposes that have significantly altered the physical environment. A communications station was constructed in 1902, and an airport was built in 1935. Midway's role a few years later during World War II is well known. A post-war peak of 2,500 military personnel at the Midway facilities has been reduced to about 300 civilian and military personnel in recent years.

Impacts were felt in other parts of the island chain as well. On Kure Atoll, a U.S. Coast Guard navigation station established in 1960 resulted in significant disturbance of the resident seal population. (The Coast Guard has taken steps to moderate the disturbance.) Kure, like the Midway Islands, is not part of the Hawaiian Islands NWR, although it is designated as a State seabird sanctuary. At French Frigate Shoals, an air base and navigation station were constructed during World War II on separate islands. These facilities, which were later consolidated on Tern Island and turned over to the Coast Guard, were deactivated in 1979. Since that time, the Fish and Wildlife Service has occupied the facility with a small research staff. During Coast Guard occupation, seals were only occasionally encountered on Tern Island beaches; since their departure, however, counts have reached over 100 seals.

Population Trends

Monk seal population data for the 18th and early 19th centuries are sporadic at best, but it is reasonable to assume that there has been a considerable drop in numbers, beginning shortly after the discovery of the various Northwestern

Hawaiian Islands. Counts of hauled out seals at the eight island areas where seals have been known to breed indicate that they declined particularly sharply over the past two and one-half decades. Since the late 1950s, counts of seals hauled out on the beaches have been made almost every year. The highest count for all islands in 1982 was about 50 percent of the high recorded counts for 1956-58. Researchers point out, however, that these figures do not reflect the entire population since it is known that there are at least two seals for every one sighted during the beach counts.

What the counts do show is a continuing downward trend. Of the six areas known to have been used consistently by monk seals during the late 1950s, only islands at the east end of the Hawaiian Islands National Wildlife Refuge—French Frigate Shoals, Necker, and Nihoa—have shown an apparent increase since that time; counts have decreased at the others. The greatest declines have been at Midway and Pearl and Hermes Reef, where recent counts have decreased about 90 percent from 1957-58. Significant decreases at other areas include Kure (80 percent), Lisianski (60 percent), and Laysan (about 65 percent).

During some monk seal counts, data are gathered on the age and sex composition of the population ashore, information useful in predicting future trends. The imbalance in adult sex ratios (many more males than females) detected in seals at some of the islands apparently is a serious limiting factor. It is contributing to behavior that is counterproductive to successful breeding and pup survival. Without corrective measures, it is reasonable to expect that the total number of monk seals will continue to decline.

Natural factors affecting the monk seal population include predation and disease. Sharks probably contribute significantly to monk seal mortality. The disappearance of most pups at Kure at some point between weaning age (about 35 days) and the age of one year may be due in part to shark predation. The impact of disease is not clearly known, but the deaths of at least 50 monk seals at Laysan Island in 1978 are thought to have resulted from eating fish that harbored a naturally occurring toxin. High levels of ciguatera were found in monk seal tissues, and it is thought that a "bloom" of the dinoflagellate *Gambierdiscus toxicus* was the source.

Recovery Actions

The *Recovery Plan for the Hawaiian Monk Seal, *Monachus schauinslandi**, was written by William G. Gilmartin, of the National Marine Fisheries Service (NMFS), in cooperation with the Hawaiian Monk Seal Recovery Team,

and was approved on April 1, 1983. NMFS has primary management jurisdiction over most marine mammals, including the monk seal, and is taking the lead in recovery of this species. The Fish and Wildlife Service, which manages the monk seal's beach and near-shore habitat in the Hawaiian Islands National Wildlife Refuge (NWR), provides assistance in the recovery effort.

Because there is not yet enough information to reliably estimate the optimum monk seal population numbers for the Northwestern Hawaiian Islands ecosystem, a quantitative definition of "recovery" is not stated in the plan. However, four intermediate goals are identified: (1) halting the population decline in the central and western parts of the species' range; (2) taking management action that would encourage population growth; (3) identifying and preventing human activities that could degrade the habitat; and (4) determining the population level that would result in maximum net productivity.

Identifying and, where possible, mitigating natural factors that contribute to low monk seal productivity is a major recovery task. In addition, investigations into the behavioral problems resulting from the imbalanced sex ratios among adult seals at various islands will address the possibility and advisability of management attempts to adjust the sex composition by relocating some of the surplus males to another island. This imbalance is a significant limiting factor at several of the islands. Various other problems affecting such subjects as pup survival, which appears to vary greatly among islands, also will be examined.

The need to better identify the monk seal's habitat requirements is a vital part of the recovery plan. In addition to documenting the emergent pupping and haul out sites, researchers collect scat and spew samples to study monk seal food preferences. Quantifying seal predation on commercially important fishes and invertebrates will be necessary to conserve the monk seal in the face of an expanding fishery. Seal consumption of the spiny lobster (*Panulirus penicillatus*), a prized commercial species, is of particular concern. Competition for food is not the only potential fishery related problem for the monk seal; some have been found entangled in discarded fishing nets and line, and this is becoming more of a factor as the fishery develops.

Habitat use studies should include a comparison of the two major habitat types for monk seals in the Northwestern Hawaiian Islands: islands fringed by extensive shallow reef waters and those surrounded by deeper waters. Instruments such as depth-of-dive recorders, radio transmitters, and sonic tags may be used. Tests reveal that there is little effect on the behavior of adult male seals

that have been instrumented. On shore, studies are planned to correlate the available haul out and pupping habitat with current patterns of use by the seals. When this information is combined with data on the availability of preferred prey species, a clearer picture of the habitat's carrying capacity should emerge. The recovery plan recommends a designation of Critical Habitat to help promote the conservation of the Hawaiian monk seal.

A method of following individual seals from time of weaning through their adult life is necessary to develop information for improved management. In 1982, a pilot tagging project was initiated using weaned pups. Many of the older seals have distinctive scars from shark and adult male seal attacks, and these natural marks also have been useful in tracking some individuals to evaluate population composition, haul out patterns, and inter-island movements. A program to record and evaluate monk seal responses to disturbance, including any impacts from the field research itself, has been initiated.

An essential part of the recovery effort will be strict enforcement of the access restrictions covering the Hawaiian Islands NWR. Kure Atoll, which is not part of the national wildlife refuge, has seen its seal population plummet because of disturbance at most of its beaches. The solution recommended in the recovery plan is to move the Coast Guard navigation station to the already developed island at Midway or, at least, to reduce the number of personnel on the atoll. Negotiations are being conducted with the Coast Guard to expand the current "off-limits" area of Kure to include beaches preferred by adult female seals. Experience at Tern Island in the French Frigate Shoals indicates that the benefits could be dramatic if beach disturbance is reduced. Further, overlay protection for currently unused islands in the Midway group as part of the Hawaiian Islands NWR could give additional protection to these once important haul out and pupping sites.

Since low survival rates for seal pups has been identified as a major factor in the species' decline, a trial "headstart" project was conducted at Kure during 1981-82. Monk seal pups were collected and maintained in captivity briefly to increase the probability of their survival upon release. Of eight female pups held in the enclosure during that time, seven were regularly resighted at Kure in 1983 after their release. The headstart project will continue, but pup production at Kure is still well below historical levels. An application has been made for permits to take abandoned seal pups from several small, locally overpopulated monk seal breeding sites at French Frigate Shoals to Kure for headstarting and subsequent release.

Shark control efforts around critical breeding areas also may be appropriate under certain conditions as a means of increasing monk seal survival, especially for pups, but potential impacts on the overall shark population and its ecosystem must first be considered.

Copies of the two recovery plans for Hawaiian forest and sea birds, as well as all other recovery plans approved by the Fish and Wildlife Service, are available for purchase from the Fish and Wildlife Reference Service (FWRS), 1776 E. Jefferson Street, 4th Floor, Rockville, Maryland 20852. (The FWRS can be reached toll-free at 800/582-3421.)

Requests for copies of the Hawaiian Monk Seal Recovery Plan should be addressed to the National Marine Fisheries Service, Southwest Region, 300 South Ferry Street, Room 2016, Terminal Island, California 90731.

Regional Briefs

continued from page 2

one injured; vehicle collisions, two dead, two injured; unknown, one injured. Of the four injured eagles, two were rehabilitated and released.

Winter surveillance of the Bear Valley, Oregon, bald eagle roost site in early February showed about 400 bald eagles present. Although roads into the area are closed during the winter by the Oregon State Police, evidence of snowmobile and three-wheeler all-terrain vehicle intrusion was found. SAs will continue to monitor the site for trespass and disturbance of the eagles.

On January 18, volunteers from the FWS Ecological Service Office in Laguna Niguel, California, and refuge personnel conducted a light-footed clapper rail (*Rallus longirostris levipes*) census at Seal Beach National Wildlife Refuge. A total of 23 were counted. The following day, 13 were counted by two refuge employees. An adequate technique for censusing parts of the rehabilitation area has not been devised, and some birds might go undetected under the current system.

Region 2—This year's bald eagle nesting season in Arizona might be the most productive since studies began in the early 1970s. Of the 14 active nests, the most ever, two are believed to be new. As of April 29, eagles at seven nests had hatched 14 young; at three nests, the eggs failed to hatch, and incubation had not been completed at the remaining four nests. The unhatched eggs will be collected and shipped to the FWS Patuxent Wildlife Research Center for analysis.

The most productive bald eagle nest in Arizona was recently jeopardized by a land-clearing project on the Fort McDowell Indian reservation. After repeated discussions with the Bureau of Indian Affairs, it was necessary for FWS Special Agents to seize the two bulldozers that were clearing mesquite trees within 50 yards of the nest. There are three young reported to be in the nest. Whether or not the disturbance will prevent the adults from tending to them has yet to be determined.

A field survey for nesting bald eagles in the Magdalena Bay region along the west coast of Baja, Mexico, was initiated in early March, cooperatively funded by the FWS and the National Audubon Society. Eugene Knoder and Erv Boeker found one fledged eagle at one site, a pair of unhatched eggs at a second site, and an abandoned (possibly inactive) nest at a third site. All nests are on islands in stands of red mangroves. The nests were discovered in 1977 by C. J. Henny and D. W. Anderson, but had not been checked again until earlier this year when FWS waterfowl biologist Jim Voelzer observed incubating eagles on two nests.

The Wood Buffalo/Aransas whooping crane (*Grus americana*) population is being radio-tracked again this year during spring migration. Migration began in late March, with the whoopers leaving Aransas National Wildlife Refuge in Texas on their long flight to Wood Buffalo National Park in Canada. This is the fourth year of the radio tracking effort.

The razorback sucker (*Xyrauchen texanus*) program is in full swing again in Arizona this year, with 1.6 million fry already produced at Dexter National Fish Hatchery (NFH) and stocked into the Salt River. Another 2 million fry were scheduled for release into the same river in April 1984, and 100,000 fingerlings are being reared at Dexter NFH for stocking into the Gila and Verde Rivers later this year. A similar stocking program was scheduled for the San Juan River in New Mexico, but was withdrawn at the request of the State. This is the fourth year of the program in Arizona.

Region 3—Region 3 Endangered Species personnel participated in a U.S. Forest Service (USFS) Timber/Wildlife Workshop, which was set up to determine ways of conserving wildlife while meeting USFS timber management goals.

The staff also has been meeting with the U.S. Army Corps of Engineers (COE), the State of Wisconsin, and an applicant for a COE permit with regard to a pro-



Photo by Mike Amara

Region 7 biologist Skip Ambrose collecting prey remains at a peregrine falcon nest along the Charley River, Alaska

posed barge-fleeting project on the Mississippi River near Prairie du Chien, Wisconsin. According to the developer's plans, the project would be constructed near habitat that has been determined essential to the conservation of the Endangered Higgins' eye pearly mussel (*Lampsilis higginsii*).

Region 5—Based on preliminary surveys, the Region 5 Endangered Species office is anticipating big improvements this year in bald eagle and peregrine falcon (*Falco peregrinus*) populations throughout the region. As of early April, there were reports indicating that 16 pairs of peregrines in the eastern U.S. have established territories.

Observers with the Maine bald eagle winter feeding study have recorded 120

different bald eagles, which suggests that eagle survival in this population might be greater than once thought.

The Region 5 Office has initiated population biology studies on the Furbish lousewort (*Pedicularis furbishiae*), small whorled pogonia (*Isotria medeoloides*), and Robbin's cinquefoil (*Potentilla robbinsiana*).

Region 7—The Alaska region's endangered species program received considerable media attention in March. In recognition of the 10th anniversary of the Endangered Species act, an Anchorage television station featured a 30-minute program on FWS endangered species work in Alaska. Jon Nelson, Assistant Regional Director, and Dennis Money, Endangered Species Coordina-

tor, explained the goals, objectives, and accomplishments of the program. Film of recovery activities for the Aleutian Canada goose (*Branta canadensis leucopareia*) and peregrine falcon also was shown. A recent *National Geographic* publication, *Alaska's National Parks*, has an article and several excellent photographs of FWS Fairbanks field station biologist Skip Ambrose while he was conducting peregrine falcon recovery activities in the Yukon-Charley National Park and Preserve. Also, the current issue of *Alaska Magazine* has a photograph and short article on the Aleutian Canada geese loaned to the Alaska Zoo last fall.

BULLETIN Available by Subscription

The *Endangered Species Technical Bulletin* is now available by paid subscription to persons not eligible to receive this publication regularly without charge. In partnership with the World Wildlife Fund-U.S., the Wildland Management Center at the University of Michigan's School of Natural Resources will be reprinting and distributing the BULLETIN (at cost) each month, along with a clearly distinguishable insert summarizing their activities. For each subscription of 12 monthly issues, send \$12.00 by check or money order (payable to the University of Michigan) to Endangered Species Technical Bulletin, Wildland Management Center, School of Natural Resources, University of Michigan, Ann Arbor, Michigan 48109.

Due to budgetary constraints, the Fish and Wildlife Service has to limit its free distribution of the BULLETIN to Federal employees and official contacts of the Endangered Species Program. Those who have already been receiving the BULLETIN will continue to do so at no charge.

CITES News

The *Endangered Species Act of 1973, as amended in 1979*, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, ensuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Illinois Ginseng Export Approved

The Service published a notice in the March 19, 1984, *Federal Register* adding Illinois to the list of States receiving export approval for ginseng legally harvested during the 1982-1984 seasons. This notice amends the Service's October 7, 1983, notice of export findings for States that had their own requirements for current information about ginseng population status, management, harvest, and State controls. Ginseng (*Panax quinquefolius*) is on CITES Appendix II, which requires the approval of the U.S. CITES Scientific and Management Authorities for export to another country.

Owens Tui Chub

continued from page 3

Although no Federal involvement is anticipated in these areas, the economic effects of a Critical Habitat designation will be considered.

The areas of Critical Habitat included in the listing proposal include the entire current range of the Owens tui chub, which consists of only two locations. One segment of the Critical Habitat is on the Owens River, from Long Valley Dam downstream for eight miles. This location continues to support a small but viable population of the Owens tui chub despite heavy predation by exotic brown trout. The only other location where a pure population of the Owens tui chub remains is in the headwater springs and outflow of Hot Creek. Since maintenance of the aquatic ecosystems depends in part on the conservation of nearby riparian habitat, a zone of 50 feet along the streams and around the springs is included as part of the Critical Habitat proposal.

Other benefits to the Owens tui chub of a listing under the Endangered Species Act include possible Federal funding of State conservation programs for this fish and development of a plan to help bring about its recovery. Efforts are now underway to establish a population of the Owens tui chub in Fish Slough, north of Bishop, California. Fish Slough currently provides habitat for another Endangered fish, the Owens River pupfish (*Cyprinodon radiosus*), and historically was habitat also for the Owens tui chub.

Back Issues of BULLETIN Available

Back issues of the *Endangered Species Technical Bulletin* are available from the Fish and Wildlife Reference

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	283	19
Birds	51	14	144	3	0	0	212	40
Reptiles	8	6	55	8	4	12	98	6
Amphibians	5	0	8	3	0	0	16	3
Fishes	29	2	11	12	0	0	56	23
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	9
TOTAL	199	44	444	48	7	36	785	113**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of Recovery Plans approved: 110

Number of species currently proposed for listing: 23 animals
23 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 38 fish & wildlife
12 plants

March 31, 1984

Service (FWRS), a private entity that disseminates publications for a number of U.S. Fish and Wildlife Service programs under government contract.

Available "hard copy" issues will be sent free of charge upon request for as long as the supply lasts. A set of back issues (July 1976-June 1982) is available on microfiche for \$3.00. For those who already have the earlier microfiche compilation (July 1976-November/December 1980), a supplement (through June 1982) is available for \$1.00. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy.

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Orders should be addressed to the Fish and Wildlife Reference Service, 1776 E. Jefferson Street, 4th Floor, Rockville, Maryland 20852, or call toll-free at 800/582-3421. Information on which other documents are available and on fees will be included in a quarterly FWRS newsletter that will be sent free to those requesting it.

April 1984

Vol. IX No. 4

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES

Technical Bulletin

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Experimental Populations Proposed for Two Fishes and a Squirrel

To assist in their recovery, the Service has proposed reintroducing two Endangered southwestern fishes, the Colorado squawfish and the woundfin, and the Endangered Delmarva fox squirrel back into parts of their historical habitats. The reintroduced animals would be designated as "nonessential experimental populations." This designation is intended to gain wider acceptance of the reintroduction effort by increasing management flexibility for the newly established populations and their habitat.

Reintroducing listed species into selected parts of their former range is often an important element in the recovery of these organisms. Unfortunately, the strict protection given Endangered animals and plants can make reintroductions of these species controversial, and result in opposition to establishment of new populations. In order to gain wider public acceptance, Congress added Section 10(j) to the Endangered Species Act in 1982 to authorize a new classification, "experimental popula-

tion," that would allow for more management flexibility by treating reintroduced populations of Endangered species in most ways as if they were Threatened. This less restrictive classification gives the Service more discretion in writing special rules allowing exceptions to certain activities that might otherwise be prohibited, particularly regulated taking. In addition, Federal activities in the reintroduction sites of nonessential populations are only subject to the provisions of Section 7(a)(4) of the Act, in which the parties confer (a non-binding procedure).

Two Southwestern Fishes

Colorado squawfish (*Ptychocheilus lucius*) were once widespread in the Southwest, occupying the entire Colorado River system, including the Gila River and its tributaries in Arizona. They were a highly valued food resource and were numerous enough to support a commercial fishery. As the region was

developed, however, most of the warm-water, free-flowing habitat of the Colorado squawfish was inundated by reservoirs or drawn down by diversion for agriculture and other purposes. In the remaining habitat, competition with exotic fishes was another major problem. Today, the squawfish has disappeared from the lower Colorado River basin, and remnant viable populations of this species can be found only in a few parts of the upper basin. The last squawfish known from Arizona waters was collected in the early 1950s, and intensive sampling since then has failed to locate any specimens anywhere in the State.

continued on page 6



Colorado squawfish

Photo by J. E. Johnson

Four Western Plants Threatened by Habitat Degradation

Four species of plants that are found only in small numbers in the western U.S. have been proposed for listing as Threatened. All four are jeopardized primarily by habitat modification and degradation. If the proposals are approved, the conservation measures authorized under the Endangered Species Act will be available for these species:

Primula maguirei

The Maguire primrose, *Primula maguirei*, is a perennial herb with showy, lavender-colored flowers. It measures approximately 4-10 cm tall,

and the stems can bear from one to three flowers. This species is found only within Logan Canyon in Cache County, Utah, where it grows on damp ledges, in crevices, and over rocks along the canyon walls. Of the 9 currently known populations, none contain more than 100 plants, and some number fewer than 30. Due to its low numbers and localized distribution, *P. maguirei* is particularly vulnerable to habitat disturbance.

All nine populations of *P. maguirei* are on land managed by the U.S. Forest Service (USFS) and the State of Utah. A highway construction project through

continued on page 8



Under the experimental population rule, Colorado squawfish would be reintroduced into this section of the Salt River, Arizona.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of April:

Region 1—Field surveys for the Endangered Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*) have yet to reveal any adult butterflies this year. In recent years, development

of recreational facilities and subdivisions have destroyed many colonies of this highly restricted butterfly.

* * *

An Action Plan for recovery of the Modoc sucker (*Catostomus microps*) has been approved by the Fish and Wild-

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life Service, U.S. Forest Service, and California Department of Fish and Game. The plan sets forth a recovery program for this fish, whose numbers have been reduced to approximately 1,000 individuals in four streams. The Service recently proposed Endangered status for this species (see BULLETIN Vol. IX No. 2).

* * *

Work on protection efforts for Coachella Valley fringe-toed lizard (*Uma inornata*) habitat continues. The first draft of the Habitat Conservation Plan was completed in April. The Nature Conservancy has options to buy a significant portion of the area being proposed for the lizard preserve. Local government agencies are joining in the process and are preparing the necessary ordinances to implement the plan. The Bureau of Land Management (BLM) and The Nature Conservancy are working on a land swap that will put more of the proposed conserved habitat into public ownership. Negotiations are underway with BLM and the Coachella Valley Water District to set aside two smaller preserves for the lizard.

A two-count Notice of Violation was issued to a landowner who had graded Coachella Valley fringe-toed lizard habitat. The issue has yet to be settled. Other violations within the habitat area have occurred and are under investigation by the Service's Law Enforcement Office.

* * *

The Service's Reno, Nevada, endangered species staff recently conducted a field trip to the Ash Meadows area to collect specimens from what is believed to be a new locality of the Amargosa niterwort (*Nitrophila mohavensis*), a plant proposed as Endangered. The site lies on BLM land within Nevada, and is approximately 4 miles from its original and only confirmed site (in nearby California). Dr. Stanley Welsh of Brigham Young University will verify the specimen. Even with a second locality, the Amargosa niterwort would still have the most restricted distribution of any plant species endemic to Ash Meadows.

* * *

The Bureau of Reclamation and other concerned parties are continuing their efforts to draft plans to settle water-use conflicts on the Truckee and Carson Rivers. A review of the preliminary draft indicated that suggested actions were inadequate for the recovery and conservation of cui-ui (*Chasmistes cujus*) and Lahontan cutthroat trout (*Salmo clarki henshawi*) in Pyramid Lake, and that the value of Carson Lake Community Pasture to migratory birds was not addressed.

continued on page 3

Guam Rail Given Emergency Protection

A small, flightless bird, the Guam rail (*Rallus owstoni*), was listed as an Endangered species under an April 11, 1984, emergency rule (F.R. 4/11/84), which will be in effect for 240 days. This bird, found only on the island of Guam in the Mariana Islands, has declined drastically over the past few years in numbers and distribution. An emergency situation developed when the U.S. Air Force (USAF) was about to begin clearing an area adjacent to Andersen Air Force Base to enhance base security. The habitat that would have been cleared is one of the few areas still occupied by the rail. After concern was raised about the rail habitat, the USAF suspended its land clearing plans while it works with the Service and Guam wildlife officials to find a way to conserve the rail and still improve base security.

The severity of the rail's decline is illustrated by the fact that, over just the past 15 years, its numbers have declined 99 percent. By 1983, fewer than 100 birds were thought to survive, and the population may now be down to fewer than 50. Although habitat loss has been a factor in the decline, it cannot account fully for the precipitous drop in the past few years. Predation by an introduced snake (the brown tree snake, *Boiga irregularis*), and other predators, including lizards, rats, dogs, and cats may also be playing a part in the decline. Another suspected cause for the sharp plunge in numbers is the possible spread of a yet undetermined avian disease. An introduced tropical mosquito, *Culex quinquefasciatus*, now is common on Guam and could be acting as a vector for avian malaria and other diseases. Investigations into the disease threat are currently being conducted. Additional research is planned for this summer. This work is being supported by a combination of both Federal and Guam Aquatic and Wildlife Resources Division funding.

Effective immediately upon publication of the emergency rule in the April 11, 1984, *Federal Register*, the Guam rail and its habitat received protection under the Endangered Species Act. In accordance with Section 7 of the Act, all Federal agencies, including the USAF, are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the Guam rail or degrade its habitat. If any Federal agency plans any action that may affect the rail's habitat, it will have to consult with the Service to develop reasonable and prudent alternatives that



Illustration by H. Douglas Pratt

Although it was once considered common, the Guam rail has declined in numbers to fewer than 50 birds.

could allow the action to proceed without harm to the species. Secretary of Defense Weinberger has given assurances to Secretary of the Interior Clark that no actions will be taken that would harm the rails.

The emergency listing will give the Guam rail all of the protection authorized by the Endangered Species Act during the 240-day life of the temporary rule. A proposal to give permanent protection under the Act to the rail and eight other vulnerable Guam animals was published in the November 29, 1983, *Federal Register* (see BULLETIN Vol. VIII No. 12), but that proposal is still under review.

Regional Briefs

continued from page 2

A release schedule for water from Stampede Reservoir was recently set in a continuing effort to recover the cui-ui and to restore Lahontan cutthroat trout to Pyramid Lake. The schedule is based on a recommendation of a 320,000 acre-foot forecast this year for the Truckee River from mid-March through July, the full storage forecast for Stampede Reservoir, and the fact that last year high flows at Marble Bluff Dam were received. These forecasts, along with Stampede releases, are good indications of a sizeable and successful cui-ui spawning run this year.

The Reno staff has recently found two new reproductive populations of the Endangered Moapa dace (*Moapa coriacea*) in the Upper Muddy River, Nevada. Prior to this find, the only known reproducing population in the Upper Muddy

River was in a 500-foot section of a tributary. Another reproducing population is located on the Moapa National Wildlife Refuge (NWR). The unfortunate thing about one of the newly found populations is that it reproduces in an irrigation ditch and most of its progeny are lost to irrigated fields. Once habitat that was recently added to the Moapa NWR is rehabilitated, young dace from the irrigation ditch will be transferred there.

Volunteer programs are well underway in the Hawaiian Islands at James Campbell NWR (O'ahu) and at Kilauea Point (Kaua'i). Volunteers on O'ahu from the Hawaii Audubon Society recently aided the Campbell NWR staff by clearing vegetation on nesting islands to provide additional habitat for the Hawaiian stilt (*Himantopus himantopus knudseni*).

Region 2—Final recovery plans were signed for the Mesa Verde cactus (*Sclerocactus mesae-verdae*), gypsum wild buckwheat (*Eriogonum gypsophilum*), and Peebles Navajo cactus (*Pediocactus peeblesianus* var. *peeblesianus*). Copies of the plans are available from the regional office.

March 26 began the seventh season of protection and conservation for Kemp's Ridley sea turtles (*Lepidochelys kempii*) at Playa de Rancho Nuevo, Tamaulipas, Mexico. This project is jointly administered by the Instituto Nacional de la Pesca and the Fish and Wildlife Service. As of April 26, 50 nests had been protected.

continued on page 10

Four Fishes Proposed for Listing as Threatened

A species of perch native to several Missouri streams, along with three desert fishes found in isolated Nevada and Oregon springs, were proposed during April for listing as Threatened species. Habitat destruction and the effects of introduced fishes have been the primary reasons for their decline. If the proposed rules are made final, the jeopardized fishes could benefit from the conservation measures authorized under the Endangered Species Act.

Niangua Darter

Native to the Osage River Basin in west-central Missouri, the Niangua darter (*Etheostoma nianguae*) inhabits clear, medium-sized streams draining hilly areas. Within this habitat, it generally prefers the margins of shallow pools with silt-free gravelly or rocky bottoms; spawning, however, occurs on swift, gravel riffles. In 1978, the Niangua darter was known from only eight small localities along 128 miles of streams and creeks in the Osage Basin (see F.R. 4/17/84 for details). The species apparently has declined at most of these sites in recent years, primarily because of modification and destruction of its natural, free-flowing habitat.

An impoundment (Truman Reservoir) extirpated one of the eight populations by inundating its free-flowing stream. The dam also presents a barrier to the movement of Niangua darters among various tributary streams, which could further jeopardize isolated populations. Stream channelization, often associated with flood control projects or highway and bridge construction, frequently damages water quality through erosion and siltation. The removal of woody vegetation along the banks of stream channels causes further erosion, changes the character of the stream substrate, eliminates pools, and generally disrupts the aquatic ecosystem. These practices are pervasive throughout the range of the Niangua darter. In addition, two potential predators of the darter, the spotted bass (*Micropterus punctulatus*) and rock bass (*Ambloplites rupestris*), were introduced into the Osage Basin before 1940 and have become established in the reservoirs. If these predacious exotics move out into tributary streams, they could further threaten the darter's survival.

The Endangered Species Committee of the American Fisheries Society expressed its opinion in 1979 that the Niangua darter is threatened. In 1980,

The Niangua darter is a slender, distinctively marked fish reaching 3 to 4 inches in length.

the Service was formally petitioned by the Ozark Endangered Species Task Force to list the fish as Threatened under the Endangered Species Act. The petition was based on a comprehensive report on the Niangua darter written by Dr. William L. Pflieger of the Missouri Department of Conservation after his research on the species during 1974-1977. Subsequently, the petition was accepted by the Service as presenting substantial evidence that the petitioned action is warranted, and the Niangua darter also was included in the December 30, 1982, Notice of Review of Vertebrate Wildlife as a Category 1 listing candidate. Under the procedures of the Act, a formal listing proposal was then prepared.

A designation of Critical Habitat was included in the April 17, 1984, listing proposal. The proposed Critical Habitat is based primarily upon the recommendation of the Missouri Department of Conservation, and it includes 90 of the 128 miles of streams inhabited by the Niangua darter plus a 50-foot riparian zone along each side. Conserving vegetation in the riparian zone will reduce siltation and other water pollution, and will help to stabilize water temperatures and dissolved oxygen levels. Potential economic effects from the proposed Critical Habitat designation will be considered prior to the decision on a final rule. Currently, there are no known Federal activities that may have an impact on the habitat.

Comments on the proposal to list the Niangua darter as Threatened are sought from all interested agencies, organizations, and individuals, and are due to the Region 3 Endangered Species Office, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, MN 55111 by June 18, 1984.



Railroad Valley Springfish

The Railroad Valley springfish (*Crenichthys nevadae*) is native to six thermal springs in the arid Railroad Valley of northwestern Nye County, Nevada. Four of the springs (Hay Corral, Reynolds, North, and Big) are located near Lockes Ranch and the other two (Big Warm and Little Warm) are within the Duckwater Shoshone Indian Reservation. Additionally, the species has been introduced into Chimney Springs, approximately 6 miles south of Lockes Ranch, and into a seepage area that forms small thermal ponds at Sodaville in Mineral County, Nevada. In these places, the fish inhabits spring pools, their outflows, and some adjacent marshy areas.

The Railroad Valley springfish is another rare species jeopardized by habitat destruction and the introduction of exotic organisms. Most of the thermal springs historically inhabited by the Railroad Valley springfish have been severely altered by agricultural activities, and springfish populations have decreased in all habitats. Diking of spring pools, diversion of outflows, and channelization of outflow creeks have reduced the amount of suitable springfish habitat at Big, Hay Corral, and Big Warm Springs. North Spring has been damaged by siltation from adjacent overgrazed range land. Large numbers of cattle drinking at the spring trample the spring banks, further degrading water quality by increasing erosion and turbidity. Excessive pumping of the aquifers that feed the springs could eliminate habitat outright by lowering the water table and causing spring failures. This danger was illustrated in 1981 when the habitat of the introduced population at Chimney Springs was lost after the spring flow ceased. Several

other springs south of Lockes Ranch also failed during 1981.

Another serious threat to the Railroad Valley springfish is the presence of exotic fishes. Guppies (*Poecilia reticulata*) have become established in Big Warm Spring. The effect of this introduced species on the springfish is uncertain; however, the establishment of guppies in other habitats occupied by native fishes has resulted in either dramatic population declines or elimination of native species. Development of a catfish farm in 1982 at Big Warm Spring further altered the physical habitat, but the introduction of the channel catfish (*Ictalurus punctatus*) is an even greater danger to the springfish. Operation of the catfish farm at Big Warm Spring has permitted the predacious catfish to the entire spring system. The springfish population has almost disappeared since catfish were introduced into the spring. There also is the possibility that other exotics could become established in other springs.

The Railroad Valley springfish, like the Niangua darter, was included in the 1982 Notice of Review of Vertebrate Wildlife as a Category 1 candidate for listing. In April 1983, the Service was petitioned by the Desert Fishes Council to list the Railroad Valley springfish, and an acceptance of the petition was published 3 months later (F.R. 6/14/83). The Service's listing proposal was published in the April 17, 1984, *Federal Register*.

Part of the listing proposal was a designation of Critical Habitat for the springfish. The six springs where this species historically occurred are included in the Critical Habitat proposal, along with their outflow pools, streams,

marshes, and a 50-foot riparian zone around these areas. Conserving this riparian area is necessary to help maintain the proper water quality, temperature, pH, and other characteristics of the aquatic environment. Marginal springfish habitat in Big Warm Spring's outflow downstream from the proposed Critical Habitat was not included, nor was the habitat occupied by the introduced populations since it is outside the species' historical range.

Federal agencies that might be involved in future actions affecting the Critical Habitat are the Bureau of Land Management (BLM) and Bureau of Indian Affairs (BIA). The only known BLM activity in the area is leasing of public lands near North Spring for cattle grazing. Currently, cattle graze extensively in a marshy area along the spring outflow with adverse effects on the aquatic habitat. BIA activities include use of the Big Warm Spring outflow by the Duckwater Shoshone Tribe for irrigation and catfish farming, both of which have degraded the habitat. Potential economic impacts from a Critical Habitat designation will be considered prior to publication of a final rule.

Two Oregon Fishes

Two fish subspecies, each known only from a highly restricted area in generally arid south-central Oregon, also were proposed in April for listing as Threatened (F.R. 4/17/84). The Hutton tui chub (*Gila bicolor* ssp.) is restricted to Hutton Spring and a small nearby seep, both along the margin of now dry Alkali Lake. Its numbers are estimated at no more than 450. The Foskett speckled dace

(*Rhinichthys osculus* ssp.) is native only to Foskett Spring in the Coleman Basin, where it numbers about 1,500, and it may be found in one small pool to the south where a transplant was attempted in 1982. Scientific descriptions of both subspecies are being prepared under the direction of Dr. Carl Bond of Oregon State University. Because these fishes occur in such low numbers and have extremely limited distribution, they are particularly vulnerable to habitat degradation.

Both spring systems are in Lake County, Oregon, on private lands that are used for cattle grazing and other purposes. A portion of Hutton Spring already has been altered by mechanical means. Channelling this springflow (which is very low, only 1.0 cubic foot per second) or excessive ground water pumping could destroy the entire spring ecosystem. Trampling by livestock at Hutton Spring also has been a problem. At Foskett Spring, the flow rate is even lower, less than 0.5 cfs. Its endemic dace is vulnerable to the same types of habitat disturbance as the tui chub. It has yet to be determined if the Foskett speckled dace has become established where it was introduced into a nearby pool.

A greater threat is ground water contamination. Hutton Spring is less than 2 miles north of a large chemical disposal site. Toxic wastes from this dump already have polluted adjacent ground water, surface water, and even the air in the Alkali Lake area. It is possible that the waters of Hutton Spring itself will become contaminated within the foreseeable future if steps are not taken to control the problem.

Fish and Wildlife Service concern about the status of the two Oregon fishes was first expressed in the 1982 Notice of Review on Vertebrate Wildlife, which designated both subspecies as Category 1 candidates for listing. In April 1983, the Service was petitioned by the Desert Fishes Council to proceed with a listing proposal, and the petition was accepted as valid. The April 17, 1984, listing proposal, if made final, would give the tui chub and speckled dace protection under the Endangered Species Act; however, it did not include a designation of Critical Habitat because the Service believes it would not be in the interest of their conservation. The location of the two springs is not well known, and publishing detailed habitat maps—which is required under a Critical Habitat designation—would make them more vulnerable to vandalism. Nevertheless, the habitat of the Hutton tui chub and the Foskett speckled dace will receive the full protection authorized under Section 7 of the Act.

Comments on the proposals to list the

continued on page 7



Restricted to a few small thermal springs and outflows in central Nevada, the Railroad Valley springfish is vulnerable to habitat alteration, overpumping of ground water, and introductions of exotic species.

Experimental Populations Proposed

continued from page 1

A limited amount of large, free-flowing riverine habitat still exists in Arizona. The Colorado Squawfish Recovery Plan calls for reintroducing the species into selected lower basin streams within its historical range. Fish for the restocking will not come from the remaining wild populations in the upper basin, but from an existing captive-bred population at the Service's Dexter National Fish Hatchery (NFH) in New Mexico. Last year, the Dexter facility produced over 200,000 young squawfish.

Woundfin (*Plagopterus argentissimus*) formerly were distributed in the mainstream Colorado, Gila, Salt, and Virgin Rivers, but the kind of habitat damage described above also eliminated this silvery minnow from most of its historic range. Only the Virgin River maintains a woundfin population. The Service has proposed to remove 5,000 fish from this population to use for restocking in several central Arizona streams that still contain some good habitat. Removing these fish is not considered likely to jeopardize the continued existence of the wild population, which during pre-spawning times may number 250,000 fish, but none will be taken until it has been determined that their removal will not impact the species. Woundfin from Dexter NFH will also be used in the reintroduction effort. If the experimental populations are successful, and the chances are considered good, they will make a significant contribution to the recovery of the species.

The proposed reintroduction plans (F.R. 4/10/84) for both the woundfin and



This stretch of the Gila River in Arizona is one of the proposed reintroduction sites for the woundfin.

the Colorado squawfish were developed in cooperation with the Arizona Game and Fish Department, and will be carried out as a joint project. Current plans call for annual stocking over the next 10 years within the species' historical range. Squawfish would be reintroduced into isolated segments of the Salt and Verde Rivers. The first stocking could take place as early as autumn 1984, and will consist of at least 100,000 3-inch hatchery-reared squawfish divided between the two sites. Woundfin will be restocked into parts of the Verde, Gila, Hassayampa, and San Francisco Rivers, and a section of Tonto Creek. The 5,000 woundfin taken from the existing wild population prior to spawning in spring 1985 will be distributed among the five areas. Current plans call for developing facilities at Dexter NFH

so that hatchery-reared woundfin can be produced in larger numbers for future reintroduction stock.

Reintroduced populations of woundfin and Colorado squawfish would be checked annually to determine their condition. Movement of these fishes from the restocking sites would be limited due to the small amount of suitable habitat upstream and downstream from the reintroduction sites. Dams and dry reaches of the Gila River will prevent any mixing of the wild and stocked populations, a requirement of the experimental population designation.

Delmarva Fox Squirrel

The Delmarva fox squirrel (*Sciurus niger cinereus*) is considerably larger than the gray squirrel, which shares its range, and has more specific habitat requirements. Historically, this subspecies of fox squirrel occurred in scattered areas throughout southeastern Pennsylvania, south-central New Jersey, eastern Maryland, the Virginia portion of the Delmarva Peninsula, and Delaware. It was confined to savannah or park-like areas, forests bordering rivers and streams, and small open woodlots with little or no understory. As this habitat was logged, then converted to agriculture or replaced by dense regrowth, the Delmarva fox squirrel disappeared from most sections of its former range, and was listed as Endangered. Currently, it is found only in part of eastern Maryland and at Chincoteague National Wildlife Refuge in Virginia (where it was reintroduced in the 1970s).

A proposal has been made to establish a non-essential experimental population of the Delmarva fox squirrel in the



Woundfin

Photo by John N. Rinne

Assawoman Wildlife Area in Sussex County, Delaware, in the extreme south-eastern corner of the State (F.R. 4/5/84). From 6 to 18 squirrels would be taken from healthy, expanding populations in Maryland and transferred to the reintroduction site, which is within the species' historical range and still contains suitable habitat. This experimental population will be geographically isolated from the nearest current population, which is about 50 miles away. The reintroduction project will be a cooperative effort among the Delaware Department of Natural Resources and Environmental Control, the Maryland Department of Natural Resources, and the U.S. Fish and Wildlife Service.

As nonessential experimental populations, the reintroduced fishes and squirrels would be treated as Threatened species under most provisions of the Act; however, they would be treated as species that are *proposed* for listing under Section 7(a)(4) for habitat conservation purposes. Instead of being required to "consult" with the Service on federally involved actions that may affect these species or their habitats, Federal agencies would only have to informally "confer."

All protective prohibitions in 50 CFR 17.31 would apply. However, both experimental population proposals include a special rule allowing the incidental take of reintroduced animals under certain circumstances by licensed hunters and anglers operating in accordance with applicable State

laws and regulations.

It should be emphasized that, until their recovery, the existing natural populations of all three species will retain their Endangered classification and will continue to receive all of the protection authorized for endangered species.

Petition Finding on Flattened Musk Turtle

On December 1, 1983, the Service received a petition, submitted on behalf of the Environmental Defense Fund, to list the flattened musk turtle (*Sternotherus minor depressus*) as a Threatened species. After reviewing the petition, the Service has issued a finding that it contains substantial biological information to indicate that a listing may be warranted (F.R. 4/5/84). Additional data on the turtle's taxonomy, distribution, and vulnerability, along with any Critical Habitat recommendations, are requested. The Service must decide by December 1, 1984, if a listing is warranted and should be proposed.

The flattened musk turtle is a small freshwater subspecies occurring in central Alabama. It has a distinctly flattened carapace, and the largest recorded specimen was 119 mm in carapace length. Threats to its survival appear to include: 1) siltation of habitat from certain mining, logging, and agricultural practices; 2) chemical contamination

and other forms of water pollution; and 3) over-collection, particularly for the pet trade.

Four Fishes Proposed for Listing as Threatened

continued from page 5

Railroad Valley springfish, Hutton tui chub, and Foskett speckled dace are due to the Regional Director, U.S. Fish and Wildlife Service, Suite 1692, Lloyd 500 Building, 500 N.E. Multnomah Street, Portland, Oregon 97232 by June 18, 1984.

If the listing proposals are made final, all four fishes will receive protection under the Endangered Species Act as Threatened species. Among the conservation measures authorized under the Act are status recognition, recovery actions, Federal aid to State cooperative programs, prohibitions against certain practices, and protection of habitat from any adverse impacts of Federal activities.

Generally, it is illegal to take, possess, transport, or engage in interstate or international trafficking in Threatened species without a permit; however, Section 4(d) of the Act authorizes the development of special regulations on the taking of Threatened species when consistent with State laws and for educational, scientific, propagation, and other conservation purposes. All four of the fishes newly proposed for listing as Threatened receive some protection through State regulations that restrict taking without a State permit. Because of the existing State controls, and because habitat degradation is the primary danger to the survival of the fishes, the listing proposals contain special rules allowing take of these species without a Federal permit if a State permit has been obtained and all other State wildlife conservation requirements are satisfied. The Service believes that this special rule will allow for more efficient management of the species, thereby aiding their conservation.

Under Section 7 of the Act, all Federal agencies are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of listed species or adversely modify their Critical Habitat. This protection will also apply to the two Oregon fishes even though a formal designation of Critical Habitat was not included in the listing proposal.



The Delmarva fox squirrel can be distinguished from the common gray squirrel by such features as its larger size, fuller tail, and uniformly colored pelage.

Four Western Plants

continued from page 1

the Right Fork of Logan Canyon, planned by the Utah Department of Transportation, would have a direct impact on one *P. maguirei* population center, and two other populations also would probably be disturbed. Any construction through that part of the canyon habitat without considering the plant's conservation could threaten its survival. Development of campgrounds in the Logan Canyon area also might pose a threat to the species.

The proposal to list *P. maguirei* as a Threatened species (F.R. 4/13/84) did not contain a designation of Critical Habitat because publishing the required maps would make this attractive primrose vulnerable to collection for hobbyists and the plant trade. Nevertheless, it will receive the full habitat protection authorized under Section 7 of the Endangered Species Act. All of the Act's other conservation measures will apply as well.

Comments on the proposal to list *Primula maguirei* as a Threatened species are invited from all interested agencies, organizations, and individuals, and are due to the Regional Director, Region 6, U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225 by June 12, 1984.

Erigeron rhizomatus

The rhizome fleabane, *Erigeron rhizomatus*, is a perennial herb growing as clumps of stems 25-45 cm high and up to 30 cm across. Its narrow, dark green leaves reach about one cm in length, and the single blue or white flower heads are 13-16 mm wide. Most of the plants are clonal offspring that have arisen from rhizomes (horizontal underground stems). They grow on loose, decaying slopes of the Chinle shale formation.

Approximately 20 small populations of *E. rhizomatus* are known, totalling only about 200 individual plants. All are found in Cibola National Forest in McKinley and Catron Counties, New Mexico. Most of the populations in the Datil and Sawtooth Mountains occur within, or very close to, extensive but currently inactive uranium claims. If the claims are reactivated and developed without planning for the conservation of *E. rhizomatus*, these populations could be severely damaged or even destroyed. Road construction to support a mining operation, with the resulting erosion, also could have harmful effects on the plants.

All of the *E. rhizomatus* populations are on lands managed by the U.S. Forest

Mammillaria thornberi is a cylindrical fishhook cactus growing up to 25 cm high, with small lavender flowers and red fruit.

Service (USFS), and they will receive the full protection authorized under Section 7 of the Endangered Species Act if the listing is approved. The proposal to list *E. rhizomatus* as a Threatened species (F.R. 4/24/84) did not contain a designation of Critical Habitat. In this case, such a regulatory designation would not add to the species' protection since the USFS already is aware of where *E. rhizomatus* occurs and can take steps to ensure the species' conservation. Publishing Critical Habitat maps would make the population sites much more widely known, and could make the plants vulnerable to vandalism and illegal taking.

Mammillaria thornberi

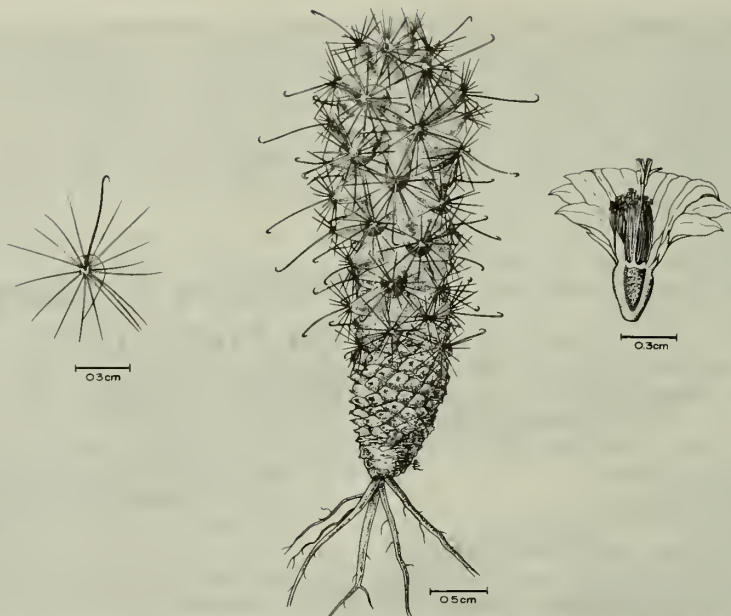
Thornber's fishhook cactus, *Mammillaria thornberi*, is a small clustering species historically known from the Sonoran Desert in Pima and Pinal Counties, Arizona. (There are also unconfirmed reports from Sonora, Mexico.) Currently, two population centers are known. The largest and healthiest populations are found in the Avra Valley/Saguaro National Monument (West Unit) area on lands managed by the National Park Service (NPS), Bureau of Land Management (BLM), and private land owners. A second, smaller population center is located on the Papago Indian Reservation; however, plants in that area are only occasional to rare, smaller in size, and not as healthy.

M. thornberi was proposed for listing as a Threatened species (F.R. 4/24/84) because almost all known populations are threatened by habitat alteration or loss. Avra Valley is undergoing rapid development as the city of Tucson

expands westward. The valley is considered desirable for agricultural, residential, business, and utility projects. In addition, the increased pumping of ground water from the aquifer is lowering the water table, thereby increasing the harmful effects of development on the local flora. Those *M. thornberi* populations on BLM-administered lands in Avra Valley currently receive some protection; however, the State of Arizona has applied for transfer of 6,274 acres to State control, including sections with several cactus populations (one of which is extensive). Other BLM lands, which may contain the species, have been identified for possible sale to private owners. Once transferred to the State or private owners, these lands are expected to be developed.

Another threat to *M. thornberi* and its habitat is the proposed construction of a Central Arizona Project (CAP) aqueduct and, possibly, a reservoir in areas containing populations of the cactus. One of the prime routes under consideration for the aqueduct cuts directly through an area populated by *M. thornberi* for several kilometers, and all alternate routes could affect one or more populations. Cactus habitat on the Papago Indian Reservation will likely be reduced because the reservation's CAP water allocation will allow an additional 3,000 acres to be converted for agriculture. *M. thornberi* habitat on reservation land already is being degraded because of overgrazing and trampling by cattle.

A designation of Critical Habitat was not included in the listing proposal since *M. thornberi* has been of interest in the past to collectors of rare cacti. The problem of collecting from habitat would be



even greater to the species if the population sites become widely known. Publishing Critical Habitat maps would pinpoint these locations. Nevertheless, even without the formal Critical Habitat designation, *M. thornberi* and its habitat would receive the full protection authorized under Section 7 of the Endangered Species Act from the adverse impacts of Federal actions.

Carex specuicola

Another Arizona plant, *Carex specuicola*, occurs in Coconino County on the Navajo Indian Reservation. This perennial sedge grows in sandy to silty soils along shady spring and seep outflows near the Inscription House Ruin. Within this restricted range, *C. specuicola* is locally common, growing in dense clumps from rhizomes. Each of the three known populations covers an area of about 200 square meters.

Many species within the genus *Carex* are palatable to grazing wildlife and livestock, and two of the three *C. specuicola* populations occur in areas used for livestock watering. An increase in livestock use at these sites could be harmful to the species, not only from grazing but from the associated trampling and soil erosion. Fencing the plant's population sites might offer protection from grazing; however, before fencing is attempted, succession in the spring community will have to be studied to determine the effects of succession on *C. specuicola*. In addition, planning for water developments at the springs and seeps will need to take the *C. specuicola* habitat into account. Although Navajo Tribal law prohibits the study or collection of this plant without a Tribal permit, it does not offer protection against habitat modification, reduction of the water supply, or grazing impacts.

Because of the threats to *C. specuicola* and its restricted habitat, this plant has been proposed for listing as a Threatened species (F.R. 4/11/84). Included in the listing proposal is a designation of Critical Habitat, which comprises about 600 square meters and contains all habitat currently known to be occupied by the plant. If the listing is approved, Federal agencies such as the Bureau of Indian Affairs (BIA) will be required to consult with the Fish and Wildlife Service on any federally involved activities that may affect *C. specuicola*. The BIA issues grazing permits on the Navajo Reservation, and could be involved in funding and/or authorizing spring development projects.

Comments on the proposals to list *Mamillaria thornberi* (due June 12), *Eriogon rhizomatus* (due June 25), and *Carex specuicola* (due June 11) should be addressed to the Regional Director, Region 2, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, NM 87103.



Carex specuicola has triangular stems 25-40 cm high and thin, pale green leaves 12-20 cm long.

All four of the newly proposed plants were included in a January 1975 report on vulnerable plants compiled by the Smithsonian Institution. On July 1, 1975, the Service published a notice in the *Federal Register* that it accepted the report as a listing petition and would begin a status review. These four plants, along with many others, subsequently were identified by the Service in a December 12, 1980, *Federal Register* notice as Category 1 candidates for future listing as Threatened or Endangered species.

If the listing proposals are made final, the four plants will be classified as Threatened species, and will receive the full protection authorized under the Endangered Species Act. Among the available conservation measures are status recognition, the development of recovery plans, possible Federal aid to cooperative State conservation programs, and prohibitions against certain actions affecting the plants and their habitat. Under Section 7 of the Act, Federal agencies would be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of these species by directly affecting the plants or adversely modifying their habitat. Section 7 applies whether or not a formal designation of Critical Habitat has been published.

All trade prohibitions authorized in Section 9(a)(2) of the Act, as implemented by 50 CFR 17.71, also would apply. These prohibitions, in part, make it illegal to import or export listed plants

or to engage in interstate or international trade in these species. Seeds from cultivated specimens of Threatened plants are exempt from these prohibitions if a statement of "cultivated origin" appears on their containers. Permits for otherwise prohibited activities are available for certain scientific or conservation purposes.

Section 9(a)(2)(B) of the Act, as amended in 1982, makes it unlawful to take (remove and reduce to possession) Endangered plants from areas under Federal jurisdiction. Section 4(d) provides for regulations to extend this protection to plants classified as Threatened. Proposed regulations for the take of Threatened plants were published in the July 8, 1983, *Federal Register*.

Kangaroos Retain Threatened Classification

The Service has withdrawn its April 8, 1983, proposal to remove three kangaroos—the red (*Macropus rufus*), eastern gray (*M. giganteus*), and western gray (*M. fuliginosus*)—from the list of Threatened species (4/24/84). This decision is based on new data from the Australian Government that indicated kangaroo numbers have declined due to the effects of a severe drought.

During the Australian summer (December/January) of 1982-1983, that country experienced the worst and most widespread recorded drought in its history. Evidence gathered during surveys conducted in the winter (July/August) of 1983, after the delisting proposal was published, indicated significant declines in populations of the three Threatened kangaroos over most of their range. Given that the newest estimates of kangaroo numbers show declines from those upon which the Service based its delisting proposal and that there is a lack of firm data showing that populations are recovering, the Service believes that it is in the best interest of conservation to withdraw the proposal as a precaution. Fortunately, the drought broke during the fall and winter of 1983. If future data show that kangaroos are recovering significantly from the 1982-1983 drought, the Service may again publish a proposal to remove the three kangaroos from classification as Threatened species.

Because kangaroos still number in the millions and need to be controlled in some areas, and because the Australian States have demonstrated efficient conservation programs, the delisting withdrawal does not affect the special rule authorizing the importation of kangaroo products into the U.S.

Fish and Wildlife Service drawing

Harbor Porpoise Proposed for Endangered Listing

The National Marine Fisheries Service (NMFS), which has management authority over most marine mammals, has proposed listing the cochito, or Gulf of California harbor porpoise (*Phocoena sinus*), as an Endangered species (F.R. 4/25/84). It is believed that only one small population remains, and that it has been seriously affected for over 40 years as an accidentally taken species during commercial gillnet fishing within its restricted range. Estimates have been made of an annual incidental catch of tens to hundreds of the porpoise.

More information on the proposed rule is available in the April 25, 1984, *Federal Register*. Comments on the proposal are due to Mr. Richard B. Roe, Office of Protected Species and Habitat Conservation, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Washington, D.C. 20235 by June 25, 1984.

Turtle Transshipment Regulations Withdrawn

The Fish and Wildlife Service and the National Marine Fisheries Service, which jointly published a May 4, 1983, proposal to change the Special Rules for Sea Turtles (50 CFR 17.42 and 227.72), have withdrawn the proposal (F.R. 4/26/84). Under the proposed change, transshipments of certain green sea turtle (*Chelonia mydas*) products from Cayman Turtle Farm, in the Cayman Islands, through the port of Miami, Florida, would have been allowed. However, transshipment through Miami is no longer useful to the farm because trade in green sea turtle products with western European nations was restricted by the European Economic Community on January 1, 1984. In recognition of this fact, the government of the Cayman Islands requested the withdrawal. Current prohibitions on transshipment and U.S. trade in this Threatened species remain in effect.

Regional Briefs

continued from page 3

Three whooping cranes (*Grus americana*) of the Grays Lake/Bosque del Apache experimental flock were injured during their migration north this spring.

The first was found on March 29 by a fence near Alamosa, Colorado. The radio the bird was carrying was found on another fence a few hundred yards away. This same bird, a young-of-the-year, hit a transmission line near Alamosa last autumn. The second bird, also of the 1983 year class, was found beneath a transmission line on April 8, near Alamosa NWR. Both of these birds were found dead. The third bird was found near Grand Junction, Colorado, on April 19 by personnel from the Colorado Division of Wildlife. It was found with a broken wing. Also from last year's highly successful hatch at Grays Lake, this crane had its wing amputated and then was flown to Patuxent Wildlife Research Center in Laurel, Maryland, where it will join the captive whooping crane breeding flock. These casualties bring the Grays Lake/Bosque del Apache flock down to approximately 27 birds; the total population in the wild stands at about 100.

Three new bald eagle (*Haliaeetus leucocephalus*) nest sites were discovered in Arizona this spring, including nests near the proposed New Waddell and Cliff Dam sites on the Agua Fria and Verde Rivers. One of the nests contains two half-grown chicks. Another nest contained eggs, but they failed to hatch. At last report, eagles at the third site on the Salt River were still incubating.

Region 4—Recovery efforts are now underway for the green pitcher plant (*Sarracenia oreophila*), which was listed as Endangered in 1980. Since the listing of the green pitcher plant, Service biologists have verified the plant's occurrence in 26 colonies, 25 of which are in northeast Alabama. The other colony is in northwest Georgia. All known colonies are extremely small, the largest being less than one acre. The Green Pitcher Plant Recovery Plan, approved in May 1983, calls for the protection and management of a minimum of 11 extant colonies, and reestablishment and management of 7 other colonies.

The Service, through its Endangered Species Field Station in Jackson, Mississippi, is now actively involved in the implementation of various parts of the recovery plan. To date, signed conservation agreements have been obtained with landowners for nine colonies of the plant. In addition, the Service and the Alabama Forestry Commission have entered into a cooperative agreement for the development and implementation of specific management plans for each colony site. It is hoped that the green pitcher plant is now on the road to recovery.

Staff members of the Jackson Endangered Species Field Station have recently completed the Ozark big-eared bat (*Plecotus townsendii ingens*) and Virginia big-eared bat (*P. t. virginianus*) recovery plans. These Endangered subspecies of Townsend's big-eared bat (*Plecotus townsendii*) are known from seven States. A 1983 maternity colony survey indicated a total population of approximately 310 reproductive female Ozark big-eared bats and approximately 3200 reproductive female Virginia big-eared bats. Highlights of the recovery efforts will be to locate colony sites, determine population trends, reduce human disturbance of maternity colonies and hibernacula, and determine and protect significant surface habitat.

A survey technique, developed by the Jackson office, now makes it possible to accurately monitor the effects of recovery efforts upon the populations of the bats. This technique allows biologists, with the aid of a night vision scope, to count big-eared bats without disturbing the colonies as they fly through a beam of infrared light.

The Jacksonville, Florida, Endangered Species Field Station is negotiating a conservation agreement with the Florida Army National Guard for the protection, management, and recovery of a population of Chapman's rhododendron (*Rhododendron chapmanii*) located at Camp Blanding, Clay County, Florida. The Endangered Chapman's rhododendron, a member of the heath family (Ericaceae), is known only from three disjunct populations in Florida. The Camp Blanding population consists of approximately 20 plants.

Chapman's rhododendron, which is adapted to periodic fire, grows on pine-lands suitable for commercial slash pine plantations. Threats to the species include commonly used site clearing and preparation techniques which destroy the shrubs; drainage projects; fire protection; collecting by ornamental breeders because of the plant's value as breeding stock for the development of new heat resistant varieties of ornamental rhododendrons; and the use of herbicides and fertilizers. The cooperative agreement allows the Fish and Wildlife Service to develop a management plan for the plant and provides for management actions to be taken on Camp Blanding. Routine monitoring is also established by the agreement and provisions are made to rescue the plants in an emergency.

The Tallahassee headquarters of the Florida Marine Patrol recently received a call on its toll-free "Resource Alert Hotline" reporting the sighting of a Florida manatee (*Trichechus manatus*) that

had been shot with an arrow. The animal was seen by a young boy in the St. Petersburg area and the report was made by his mother. The Tallahassee office notified the Gainesville Sirenia Lab and the Tampa District Office of the Florida Marine Patrol. An officer was dispatched to the scene to confirm the sighting, but the "arrow" turned out to be a length of plastic connecting a floating radio transmitter to a collar placed around the tail of the manatee. The transmitter was developed by Sirenia Lab personnel to enable them to radio track manatees in salt water. The floating transmitters were attached to thirteen manatees in the Kings Bay/Crystal River area during February and March of this year while the animals congregated there to take advantage of the warmer waters.

Region 5—A major step in the Virginia round-leaf birch (*Betula uber*) recovery program began on April 24, 1984. Approximately 500 2-year old seedlings were planted in five preselected areas at the Jefferson National Forest in southwest Virginia with the hope of establishing additional populations of this Endangered tree. Dr. Terry L. Sharik of Virginia Polytechnic Institute was assisted by Fish and Wildlife Service and U.S. Forest Service personnel in planting the trees.

Regional Director Howard Larsen met with Nova Scotia, Canada, officials to secure the transplant of six bald eagles to the State of Massachusetts in June.

Early survey work indicates that as many as 20 pairs of peregrine falcons (*Falco peregrinus*) are nesting or attempting to nest in Region 5 States this spring.

Roger Hogan of the Region 5 Endangered Species Office, and Judy Jacobs and Andy Moser from the Annapolis, Maryland, Field Office met with individuals from the National Speleological Society, Region 4 Service personnel, and staff members of the West Virginia Department of Natural Resources on April 25 and 26 in Franklin, West Virginia. The main topic of discussion was how to best protect Indiana bat (*Myotis sodalis*) and Virginia big-eared bat (*Plecotus townsendii virginianus*) caves from predators and unauthorized entry. Various gate and fencing designs were evaluated.

Region 6—On April 10, 1984, a meeting was held in Casper, Wyoming, to discuss the black-footed ferret (*Mustela nigripes*). Personnel from the Wyoming Game and Fish Department, Fish and Wildlife Service, Wildlife Preservation Trust, and Animal Research Conservation Center of the Bronx Zoo discussed the status of the ferret, future management plans, and the potential of establishing captive propagation facilities and transplanting black-footed ferrets.

Personnel from Regions 2 and 6 met on April 18, 1984, in Alamosa, Colorado, to discuss the procedures to be used in surveying for black-footed ferrets in both regions. They agreed to require

surveys for ferrets on projects that result in permanent changes to habitats, if the projects pass through isolated prairie dog towns of 250 acres or more, or through a complex of smaller towns that could combine to support a black-footed ferret population. In addition, the Service will not require surveys for black-footed ferrets on linear projects that only temporarily disturb prairie dog towns (pipelines, transmission lines, fences, etc.) of any size from July-February, as long as efforts are made to complete construction through the prairie dog town quickly. However, if a temporary-disturbance linear project passes through a prairie dog town of 250 acres or more, or through a complex of smaller towns between April-June, then ferret surveys will be required. As the result of the meeting, appropriate changes will be made in the FWS Black-Footed Ferret Survey Guidelines. For further information on these guidelines or the black-footed ferret, contact Max Schroeder, U.S. Fish and Wildlife Service, 1300 Blue Spruce, Fort Collins, Colorado 80523; telephone FTS 323-5277, commercial 303/493-4855.

A draft Colorado River Conservation Plan was completed and issued to State and Federal agencies for review in July 1983. This draft caused considerable controversy between the needs of water developers/users and those of the Endangered Colorado squawfish (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and bonytail chub (*Gila elegans*). Major concerns related to the streamflows recommended by the Service *continued on page 12*

CITES News

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, ensuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES,

reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Eight Animals Added to CITES Appendices

In order to help control overexploitation of certain species for the exotic leather trade, the Republic of India has added seven native snakes to Appendix III of CITES. Added to CITES for the first time are the olive keelback water snake (*Atretium schistosum*), checkered keelback water snake (*Natrix piscator*), dog-faced water snake (*Cerberus rhynchops*), Indian rat snake (*Ptyas mucosus*), Indian cobra (*Naja naja*), king cobra (*Ophiophagus hannah*), and

Russell's viper (*Vipera russellii*). Through their addition to CITES Appendix III, India has given notice that these snakes are subject to regulation within its jurisdiction for the purposes of preventing or restricting overexploitation, and calls for the cooperation of other CITES Parties in controlling trade. CITES permits will be required for international trade in manufactured products made from these species. India currently bans the export of their skins.

The giant panda (*Ailuropoda melanoleuca*), which was on Appendix III, has been moved to the more protective Appendix I at the request of the People's Republic of China. Only a few giant pandas remain in the world, and they are threatened by a die-off of the arrow bamboo, their preferred food. Under CITES regulations, any international trade in Appendix I species requires permits from both the exporting and importing countries.

Regional Briefs

continued from page 11

vice, perceived infringement on States' water rights, and the Windy Gap assessment procedure. As a result, a high-level Colorado River Coordinating Committee was established, composed of the Region 6 Director, FWS; two Bureau of Reclamation regional directors; Directors of the Departments of Natural Resources from Utah and Colorado; and a representative from the Wyoming Governor's Office.

This group was established to direct a coordinated interagency approach to resolving the complex problem. It met and set up two subcommittees, biological and hydrological, to address the streamflow and biological data issues. Representatives from State and Federal agencies, water interest groups, industry, and conservation agencies are on the subcommittees. They are charged with the responsibility of analyzing the streamflow and biological data used by the Service, determining its validity, identifying data voids, and developing additional data needed. They also will be recommending various management alternatives to solve these issues in the Upper Colorado River Basin. The final objective will be to develop a coordinated conservation plan that will meet the needs of the fishes and provide for water development.

* * *

Region 7—Every March and early April, wintering Aleutian Canada geese (*Branta canadensis leucopareia*) congregate in northern California in preparation for a long migration to their Aleutian Island nesting grounds. This year, a severe coastal storm struck the northern California coast when approximately 3,000 Aleutian geese were staging at Castle Rock NWR. Dr. Paul Springer (Research-Arcata Field Sta-

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	19	233	3	0	22	292	19
Birds	52	14	144	3	0	0	213	41
Reptiles	8	6	60	8	4	13	99	8
Amphibians	5	0	8	3	0	0	16	3
Fishes	30	3	11	12	1	0	57	26
Snails	3	0	1	5	0	0	9	6
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	5
Plants	58	3	0	9	2	2	74	21
TOTAL	203	45	459	48	9	37	801	131**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of Recovery Plans approved: 117

Number of species currently proposed for listing: 26 animals
27 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 40 fish & wildlife
13 plants

April 30, 1984

tion) reports that on the following three days, 42 Aleutian geese were found dead along a three-quarter mile stretch of beach north of Castle Rock. Necropsies on nine of the birds, which appeared free of wounds, lead poisoning, and disease, indicated drowning as the cause of death. Although the number of geese killed is less than 2 percent of the total population, documentation of this type of natural mortality is significant, since Aleutian geese inhabit and migrate through a region well known for its inclement weather.

* * *

Skip Ambrose of the Fairbanks, Alaska, Field Station recently spent three weeks in the States of Texas and Washington observing peregrine falcons (*Falco peregrinus*) in areas where Alaska banded peregrines have been encountered. Although migrating peregrines were observed in both areas, the size and timing of migration was not as expected, with relatively few birds seen and no Alaska banded peregrines captured. Following his return to Alaska, Skip observed three adult peregrines along the Tanana River on April 20 and 21.

May 1984

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES

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Notice of Review on Invertebrate Species

by Steven M. Chambers
Office of Endangered Species

The Service has published a notice of review that lists more than 1,000 U.S. invertebrate taxa (species or subspecies) that are, or have been, candidates for listing under the Endangered Species Act (F.R. 5/22/84). Although these species are not officially protected under the Act, this "candidate list" will be used as a planning document in the selection of those species that will be formally proposed for protective status or will be the subjects of field surveys. The notice will also inform the public of the magnitude of conservation needs for candidate invertebrates as well as give the current disposition of individual species that the Endangered Species Program has dealt with in the past. It is hoped that this will encourage research and exchanges of information that might clarify the status of species on the list. Similar lists have previously been published for plants and vertebrate animals.

Invertebrate animals are those that lack backbones. Some of the more familiar invertebrate groups are the mollusks (including snails and clams), crustaceans (including crayfish and shrimp), insects, and arachnids (including spiders). Most of the major invertebrate groups, or phyla, are comprised of far more species than the phylum Chordata, which includes all of the vertebrates (birds, mammals, and other animals with backbones).

Each genus, species, or subspecies on the review list has been given a category number of 1, 2, 3A, 3B, or 3C. These numbers are defined as follows:

- **Category 1** comprises taxa for which the Service has sufficient data on hand to support the biological appropriateness of proposing to list the species as Endangered or Threatened. Eventual publication of proposed rules on these species is anticipated.



One of the candidate mollusks, the stirrup shell (*Quadrula stapes*), is found in rivers within the Mobile Basin of Alabama and Mississippi, where it is threatened by extensive alteration of its riverine habitat. This mussel is a Category 1 candidate.

- **Category 2** comprises taxa for which the Service has information indicating that a proposed listing as Threatened or Endangered might be

continued on page 6

Seven Desert Fishes Proposed for Listing

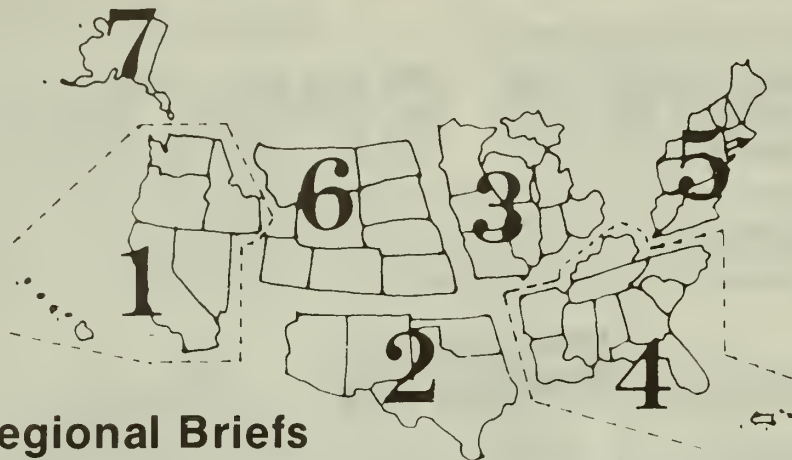
The decline of many native desert fishes of the western United States can be traced primarily to intensive use of the region's limited water resources. When the needs of wildlife are not considered during a project's early planning phases, the result can be habitat alteration or destruction. Introductions of exotic fishes and other aquatic organisms also are having adverse impacts on many native fishes and their ecosystems.

As the West became drier at the close of the Pleistocene Epoch, some 10,000 -

continued on page 4



The Callipe silverspot butterfly (*Speyeria callippe callippe*) is one of California's insect candidates. It occurs on San Bruno Mountain in San Mateo County.



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of May:

Region 1—Stream habitat on the Moapa National Wildlife Refuge in southern Nevada is being rehabilitated for the reintroduction of Moapa dace (*Moapa coriacea*). Thirty mature palm trees were uprooted along a 600-foot

stream reach and relocated off the refuge. Sunlight can now reach the stream, and the area of palm roots carpeting the stream bottom has been substantially reduced. The stream was also chemically treated to remove exotic fish species, but safeguards were taken to minimize impacts to native candidate snails and fish. All that remains is to

enlarge pool habitat and introduce suitable bottom substrate. In July, 100 Moapa dace will be taken from the Muddy River and stocked in the rehabilitated stream.

The Pacific Islands Endangered Species staff began an intensive survey of plants on the Islands of Truk, Ponape, Yap, and Kosrae in support of the Pacific Islands Forest Birds Survey.

The Service is upgrading its designation of the Ho'okele'kele Tributary in the Wailuku River system on the Island of Hawai'i from Resource Category 4 to Resource Category 2. This action is the result of a recent survey conducted within this remote stream by Andy Yuen of the Service's Honolulu, Hawai'i, Field Office. Yuen discovered spawning o'opu alamo'o (*Lentipes concolor*), a Category 2 fish candidate species, in the stream, which would be directly impacted by a U.S. Army Corps of Engineers hydroelectric power development project proposed for that area. The Service is recommending relocation of a proposed intake structure that plans to dewater the stream.

The cui-ui (*Chasmistes cujus*) population began its annual spawning migration up the Truckee River in April. The first evidence of this run was from the capture of 10 cui-ui in the Marble Bluff Dam's river trap. Since then, nearly 1800 of these fish have been caught. Most of the fish were transported upstream; the remainder were either released in the dam's impoundment or taken to the Pyramid Lake Indian Tribe's cui-ui hatchery. Although a large number of cui-ui have been caught in the river trap this year, it is still a highly ineffective system for transporting the fish across the dam.

Region 2—Twenty five acres of Knowlton cactus (*Pediocactus knowltonii*) habitat were fenced by The Nature Conservancy to keep cattle and off-road vehicles from impacting the cacti. The Nature Conservancy received this land from the public Service Company of New Mexico.

Seven Mexican wolf pups (*Canis lupus baileyi*), two males and five females, were born recently at the Rio Grande Zoo in Albuquerque, New Mexico. Three pups, two males and one female, were born to the original wild-caught female at the Wild Canid Survival and Research Center in St. Louis, Missouri, on May 24, 1984. All pups and parents are doing well. No other Mexican wolf litters are expected this year.

Norm Scott of the Service's Denver Wildlife Research Center is conducting a study on Harter's water snake (*Nerodia*

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harteri) along the Brazos and Conchos Rivers in Texas. This study will complement the preliminary study completed by Dr. Terry Marshall of Angelo State University and will, it is hoped, assist in determining the status and distribution of this candidate for listing.

Region 4—A meeting was held at the Florida State Museum to discuss the status of the gopher tortoise (*Gopherus polyphemus*). The attendees decided that once additional data are available from the States of Florida and Georgia, a determination will be made concerning the status of the species. Dr. Ren Lohofener from Mississippi State University has just completed a 5-year study of the gopher tortoise in Mississippi and has considerable data to prove the endangerment of the species within that area. Dr. Lohofener will soon forward a petition to list the western population of the gopher tortoise.

The 1984 census of the best known population of the Ozark cavefish (*Amblyopsis rosae*) found 100 individuals. This is comparable to the 1983 census of 97 cavefish. Since publication of the proposal to list this species as Threatened (F.R. 1/31/84), an additional population has been discovered in a cave in Oklahoma which lies within the known historical range of the species.

Under a Fish and Wildlife Service contract, the Florida Natural Areas Inventory conducted an aerial survey for the Endangered Chapman's rhododendron (*Rhododendron chapmanii*). Preliminary findings revealed additional plants in known populations and perhaps one new population. All of the plants appear to be located in coarse sand on the steep slopes of titi (*Cliftonia*) bogs in Gadsden County, Florida. Further survey work will be needed to locate additional plants in the remainder of Gadsden, Liberty, and Gulf Counties.

The four remaining dusky seaside sparrows, *Ammospiza maritima nigrescens*, (all males) that are in captivity at Walt Disney World's Discovery Island Zoological Park in Orlando, Florida, appear to be paired with Scott's (*A. m. peninsulæ*) or Wakulla seaside sparrows (*A. m. juncicola*). One nest contains two eggs.

A total of 73 manatees (*Trichechus manatus*) are known to have died during the first four months of 1984. The causes of death have been attributed to 16 boat/barge collisions, 2 involvements with dams or locks, 8 dependent calf mortalities, and 22 from natural causes. In 25 cases, the cause of death could not be determined. A large portion of the

continued on page 10

Three Plants Proposed for Listing

Three plant species were recently proposed by the Service for listing under the Endangered Species Act. Both the large-flowered fiddleneck (*Amsinckia grandiflora*) and the Last Chance townsendia (*Townsendia aprica*) were proposed for listing as Endangered (F.R. 5/8/84 and F.R. 5/29/84, respectively), and the Sacramento Mountains thistle (*Cirsium vinaceum*) was proposed as a Threatened species (F.R. 5/16/84).

Large-flowered Fiddleneck

The large-flowered fiddleneck, an annual, has bright red-orange flowers borne in a fiddlehead-shaped inflorescence. Its green leaves and stems are densely covered with coarse, stiff hairs, and its fruits, called nutlets, have smooth and shiny surfaces.

Historically, this species was found in Alameda, Contra Costa, and San Joaquin Counties, California. Today it is known to survive at only one site covering about one-half acre in southwestern San Joaquin County. In August 1980, fewer than 50 plants were observed. Livestock grazing is believed to have been responsible for the extirpation of some previously known populations.

Very little is known about the ecology and life history of the large-flowered fiddleneck, but a number of studies have been concerned with its unusual reproductive system, which may be contributing, in part, to the rarity and endan-

germent of the species. Other factors that may threaten *Amsinckia grandiflora* and its habitat include the testing of chemical high explosives and the grass fires that may result from such tests; controlled burns performed within or near the habitat; and the encroachment of weedy competitors, especially other more aggressive fiddleneck species. The decline of the species throughout most of its historic range has been the result of conversion of habitat to agricultural uses, intensive livestock grazing, and other land-use activities that altered the natural plant communities.

The large-flowered fiddleneck has an unusual flower morphology and a highly restricted distribution, both of which contrast sharply with most other members of the genus. As a consequence, this species has been the object of a number of studies concerning the reproductive biology and evolution of the genus *Amsinckia*. If not carefully monitored and managed, the utilization of this small and restricted population for such scientific purposes could become a significant threat to the species.

The State of California lists the large-flowered fiddleneck as rare, but State law does not provide adequate protection for this species in its natural habitat. Although the State law provides for such

continued on page 10



The primitive reproductive system of the large-flowered fiddleneck places it at a disadvantage in competition with more aggressive exotic and native species. Habitat modification associated with agriculture and explosives testing are other factors threatening its survival.

Photo by Stephen Weller

Seven Desert Fishes Proposed for Listing

continued from page 1

20,000 years ago, many western fishes became isolated in small springs and creeks where they often had to adapt to such environmental extremes as high temperatures and salinities. These adaptations to specific ecological conditions make it difficult for desert fishes to survive today's rapid modifications of their easily disturbed habitat. In recognition of their jeopardized status, the Service proposed during May to list seven more desert fishes as Threatened or Endangered species. If the proposals are made final, protection under the Endangered Species Act will be authorized for the following:

Pecos Bluntnose Shiner

One of the two subspecies of *Notropis simus*, the Pecos bluntnose shiner (*N. s. pecosensis*), is a silvery fish that grows up to 9 cm in length. It is named for the river it inhabits, the Pecos River in New Mexico, and for its bluntly rounded snout. The other subspecies, *N. s. simus*, occurred in the Rio Grande but has not been collected since 1964 and may already be extinct.

As water use along the Pecos River increased, the Pecos bluntnose shiner decreased severely in range and numbers. Siltation and contaminated run-off from feed lot operations, along with introductions of predatory fishes, have been implicated in the decline of the subspecies and other members of the Pecos River ichthyofauna. A 1982 study by the New Mexico Department of Game and Fish reported the subspecies from only 282 km of the Pecos River in the central portion of its historical range. Even this remaining habitat is spotty and often marginal.

Diversion of the Pecos River for irrigation and water storage has reduced and, in some stretches, eliminated water in the main channel. The river's flow largely is controlled by two Federal agencies, the Bureau of Reclamation (BR) and the U.S. Army Corps of Engineers. A new impoundment proposed by the BR, Brantley Dam, could further restrict downstream water flow and inundate a spring where one population of the shiner may still occur.

Interest in the status of the Pecos bluntnose shiner had been building for some time. The Rio Grande Fishes Recovery Team, within whose jurisdiction *N. s. pecosensis* falls, became concerned about the status of this subspecies in 1978, and recommended listing it

in 1980. After completion of a status report in 1982, the New Mexico Department of Game and Fish recommended listing it as Threatened with Critical Habitat. New Mexico already lists *N. s. pecosensis* under its own legislation as Endangered; this State classification prohibits taking the fish but does not protect its habitat. It was included in the Service's December 30, 1982, Vertebrate Notice of Review as a Category 1 candidate for listing, and was one of 17 fishes in an April 12, 1983, Desert Fishes Council listing petition; the same is true for the other six fishes proposed during May 1984 for listing.

The Pecos bluntnose shiner was proposed by the Service for listing as Threatened (F.R. 5/11/84). Contained in the listing proposal is a designation of Critical Habitat for two stretches of the Pecos River totalling 86 km. These areas contain permanent flow that is not dependent on artificial releases of water, and currently support relatively abundant, self-perpetuating populations of *N. s. pecosensis*. A 15-meter riparian zone along each side was included in the Critical Habitat proposal to help control run-off and maintain water quality. No impacts from this proposal are expected on activities occurring on Federal or private lands, although it may affect future Federal water developments on the Pecos River within *N. s. pecosensis* habitat unless certain minimum flows are maintained. Any economic or other impacts of a proposed Critical Habitat designation are considered prior to a final decision.

Comments on the listing proposal are invited from all interested agencies, organizations, and individuals, and should be received by the Service's Region 2 Director by July 10, 1984. (See page 2 of the BULLETIN for the address.)

Warner Sucker

During the Pleistocene, a large lake covered much of the Warner Basin in south-central Oregon. As surface waters receded, the Warner sucker (*Catostomus warnerensis*) became isolated in a few remaining creeks and small lakes. This species is now restricted to portions of Crump and Hart Lakes, a spillway canal north of Hart Lake, and Snyder, Honey, Twentymile, and Twelvemile Creeks. Residents of the area can recall when the Warner sucker was abundant; however, its distribution and numbers have decreased to the point that it has been proposed for listing as a Threatened species (F.R. 5/21/84).

In order to reproduce, the Warner sucker must ascend streams to spawning habitat consisting of silt-free gravel bars and moderate, clean water flows. Unfortunately, instream barriers and water diversion structures have often

prohibited the movement of suckers into their spawning habitat. During periods of low precipitation, all water leading to the sucker's spawning habitat often is diverted, thereby eliminating any chance for the fish to reproduce.

Other threats to the Warner sucker include siltation of its gravel bed spawning areas resulting from stream channelization and overgrazing. Runoff and leachates containing fertilizers and pesticides from adjacent agricultural lands put further stress on the water quality. In addition, exotic fishes that have been introduced into lakes in the Warner Basin are capable of preying on the Warner sucker and could contain new parasites and diseases.

A designation of Critical Habitat for the Warner sucker was included in the listing proposal. It consists of a total of 26 stream miles along four creeks and a spillway in Lake County, along with a 50-foot riparian zone on each side. Currently, there are no known activities involving Federal agencies that are having a direct impact on the habitat.

Comments on the listing proposal are invited and are due to the Region 1 Director, by July 20, 1984 (address on page 2).

Desert Dace

Another relict species, the desert dace (*Eremichthys acros*), is endemic to a few thermal springs and creeks in the Soldier Meadows area of Humboldt County, Nevada, where it has survived in isolation for tens of thousands of years. This fish is the only representative of the distinctive genus *Eremichthys*. One of its unique adaptations was the evolution of prominent horny sheaths on its jaws, structures that help the fish to scrape algae and other aquatic organisms from the surface of the rock substrate.

Tolerance of warm water temperatures is another adaptation of the desert dace; fish have been found in waters as hot as 100.4°F. Where the spring headpools exceed this temperature, however, dace are restricted to the somewhat cooler outflow creeks. Many of the waters inhabited by the desert dace are on private lands, and the amount of suitable habitat has been significantly reduced by diversion of outflow from natural channels into man-made ditches for agriculture. Further, Soldier Meadows is classified as a Known Geothermal Resource Area, and ground water pumping could interfere with the thermal aquifers that feed local springs.

Reservoirs have been constructed recently on the north and south ends of the Soldier Meadows area and have been stocked with non-native fishes. If these exotics enter habitat occupied by the desert dace, they could have a harm-



Photo by John N. Rinne

desert pupfish, *Cyprinodon macularis*

ful effect through predation, competition, and introductions of exotic parasites and diseases.

Due to the reductions in desert dace numbers and habitat, this fish has been proposed by the Service for listing as a Threatened species (F.R. 5/29/84). The proposed rule contains a Critical Habitat designation that would cover thermal springs and their outflows, along with surrounding 50-foot riparian zones, within an area about 4 miles long and 1 to 2 2/3 miles wide. (See May 29, 1984, *Federal Register* for details.) Potential Federal activities that might require consultation include aquatic habitat modification, grazing permits, and leases for geothermal exploration and/or development.

Comments on the proposal to list the desert dace are invited and are due to the Region 1 Director by July 30, 1984.

Three White River Fishes

During pluvial times, 10,000-40,000 years ago, the extensive White River system of eastern Nevada was a tributary of the Colorado River (by way of the Virgin

River). As a result of climatic changes, the White River now is dry for most of its course. A number of relict fishes, including the White River spinedace (*Lepidomeda albivallis*), White River springfish (*Crenichthys baileyi baileyi*), and Hiko White River springfish (*C. b. grandis*), survive in a few remnant springs and creeks.

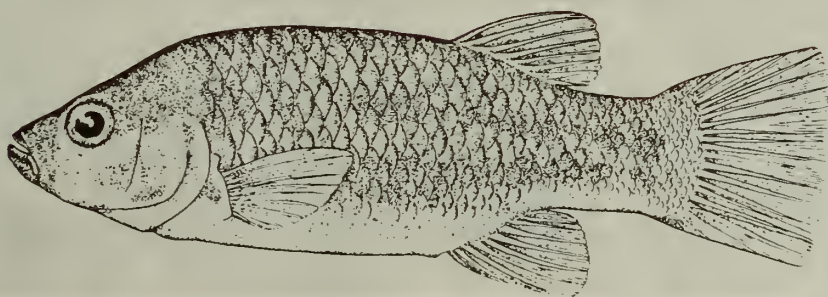
The White River spinedace is large for its genus, often attaining a length of 4-5 inches, and has distinctive coloration. Although it occurred in large numbers until 1960, this spinedace was considered rare by 1979. It has been extirpated from five localities, and survives only in Flag and Lund Town Springs. The Service has proposed listing the White River spinedace as Endangered (F.R. 5/29/84). Habitat disturbance by creek channelization and diversion of water for agricultural and residential use has been responsible for much of the decline. Introductions of exotic fishes into spinedace habitat also have been harmful, guppies (*Poecilia reticulata*) and mosquitofish (*Gambusia affinis*) in particular.

The proposed Critical Habitat for the White River spinedace includes Flag, Lund Town, and Preston Big Springs—the latter being historical habitat and a potential reintroduction site—along with their outflows and surrounding 50-foot riparian conservation zones.

Two subspecies of *Crenichthys baileyi*, the White River springfish (*C. b. baileyi*) and the Hiko White River springfish (*C. b. grandis*), were until 1967 known from three small spring areas in Pahranaagat Valley, Nevada. *C. b. baileyi* is found in Ash Springs, which consists of several small source springs feeding a nearby pool. The pool once provided extensive habitat for *C. b. baileyi*, but it has been dammed and otherwise altered for development as a swimming hole. Springfish at this site now are restricted, in reduced numbers, to the source spring area which still remains in a relatively natural condition. *C. b. baileyi* has been proposed for listing as Endangered, and Ash Springs for designation as Critical Habitat (F.R. 5/7/84).

The Hiko White River springfish, *C. b. grandis*, was included in the same proposal for listing as Endangered. Formerly, this fish occurred in two springs. It was extirpated from Hiko Spring in 1967 when exotic predators, largemouth bass (*Micropterus salmoides*), invaded the spring via an irrigation ditch from the Key Pittman Wildlife Management Area where they had been stocked. The remaining population in Crystal Springs is threatened by habitat alteration and exotic fishes. Exotic convict cichlids (*Cichlasoma nigrofasciatum*) now far outnumber the native fish in Crystal Springs. Although habitat at both springs has been damaged by channelization, water diversion, and exotic fish

continued on page 9



Two subspecies of the White River springfish (*Crenichthys baileyi*) are threatened by habitat degradation and exotic fishes.

Interior Least Tern Proposed as Endangered

A small bird once found widely throughout the Midwestern United States, the interior least tern (*Sterna antillarum athalassos*), has been proposed by the Service for listing as an Endangered species (F.R. 5/29/84). Alteration and destruction of its riverine island nesting habitat is the primary cause of its decline.

The interior least tern is one of four recognized subspecies of a New World bird, *Sterna antillarum*, three of which inhabit the U.S. One subspecies already listed as Endangered, the California least tern (*S. a. browni*), breeds in reduced numbers along the Pacific Coast from central California to Baja California. The eastern least tern (*S. a. antillarum*) breeds along the Atlantic and Gulf Coasts and is not listed. Although the wintering area for the interior subspecies is unknown, least terns do migrate and are found along some coastal areas of South and Central America in the winter.

Historically, islands in the midwest's major river systems were periodically destroyed and created by natural erosion and deposition processes. Occasional flooding maintained some of the islands in the barren or sparsely vegetated conditions required by terns for nesting. The nests are simple unlined scrapes on the ground. Least terns are colony nesters, and destruction of their breeding island habitat can affect relatively large numbers of birds. Although the interior least tern was once common throughout its breeding range, which stretched from North Dakota to Louisiana, most of its populations have experienced significant declines. They appear to be locally common in a few areas; however, in 1980, one researcher estimated that only about 1,250 remain. This bird is already considered endangered by eight States within its range.

The construction of reservoirs along many of the midwest's large rivers for flood control, navigation, and irrigation



interior least tern

has permanently inundated many former nesting islands and so regulated natural erosion and deposition processes that new islands are not being formed. Since most of the islands that do remain are not subject to scouring by floods, vegetation has grown up and eliminated the open least tern nesting habitat. It is likely that bare sand islands and riverbanks will continue to disappear.

A number of other factors have been implicated in the decline of the interior least tern. Some of the islands and river banks along the Mississippi, Missouri, and Platte Rivers otherwise favored by terns are becoming more heavily used for recreation. Ground-nesting birds also are vulnerable to predation by the dogs, cats, and coyotes that sometimes gain access to nesting islands. Some interior least terns nest on the barren flats of saline lakes and ponds like those at Salt Plains National Wildlife Refuge in Oklahoma; however, they are threatened by the development of chloride control projects that could affect their nesting habitat and food resources (fish).

Under the Migratory Bird Treaty Act, it is already illegal to take, possess, transport, or ship interior least terns and their parts, eggs, nests, and young; however, it does not give protection to the bird's habitat. Listing the interior least tern

under the provisions of the Endangered Species Act would not only reinforce the taking prohibitions, but would provide for Federal assistance in the conservation of tern habitat. A formal designation of Critical Habitat was not included in the proposed listing rule because of the ephemeral nature of the nesting islands and the bird's apparent habit of making frequent changes of nesting colony locations. Nevertheless, if the rule is made final, the interior least tern's habitat will receive the full protection authorized under Section 7 of the Endangered Species Act. Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the interior least tern by directly affecting the birds or adversely modifying their habitat.

Among the other benefits to the interior least tern if the proposed rule becomes final are an increased recognition of its reduced status, possible Federal funding for State cooperative conservation programs, and development of a recovery plan.

Comments on the listing proposal are welcomed from all interested agencies, organizations, and individuals, and are due to the Region 3 Endangered Species Coordinator (address on page 2) by July 30, 1984.

Invertebrate Species

continued from page 1

appropriate, but for which conclusive biological data that would support listing are not available at this time.

Categories 3A, 3B, and 3C designate taxa that are no longer being considered by the Service for listing as Endangered or Threatened:

- **3A**—taxa for which the Service has persuasive evidence of extinction. If new evidence should indicate that a

taxon in this category is not extinct, that taxon would be placed in category 1 or 2 and could acquire high priority for listing.

- **3B**—scientific names that, on the basis of current taxonomic understanding, usually as represented in published taxonomic treatments, do not represent taxa meeting the Act's definition of "species."
- **3C**—taxa that have proven to be significantly more widespread or common than previously believed, and/or

are not subject to any identifiable threat.

Of the over 1,000 species on the notice list, 39 are in Category 1, 140 are in Category 3, and the remainder are in Category 2. Of the Category 3 species, 82 are thought to be extinct (Category 3A).

Candidate species are found throughout the United States, although a disproportionate number, mostly insects, are endemic to the State of Hawai'i. California also has a large number of endemic candidate species, which are mostly

Utah Prairie Dog Reclassified to Threatened

The Utah prairie dog (*Cynomys parvidens*) has been reclassified under the Endangered Species Act from Endangered to Threatened (F.R. 5/29/84). This species occurs only in southern Utah where its population in the 1920's was estimated to be about 95,000 animals. Its subsequent decline was due to a number of factors, including deliberate poisoning and loss of habitat to human residential and agricultural developments. However, beginning in 1972, the downward trend of the species was halted, and since that time overall numbers have increased.

The area occupied by the prairie dogs today encompasses some 456,000 acres, and the total summer population is estimated to be in excess of 30,000 animals. The recovery has been particularly evident in the Cedar and Parowan Valleys of eastern Iron County, Utah, where the winter population increased from 1,200 adults in 1976 to 7,300 adults in 1982. Because of the improved status of the Utah prairie dog, and the fact that it no longer faces extinction in the foreseeable future, the Service feels that a Threatened classification more accurately reflects its current biological status. The reclassification was proposed in the May 13, 1983, *Federal Register* (see BULLETIN Vol. VIII No. 6). Comments received in response to the proposal were generally supportive.

In addition to the reclassification of the Utah prairie dog, the Service published a special regulation that would allow a maximum of 5,000 animals of this species to be taken annually between June 1 and December 31 under the supervision of Utah State officials in the Cedar and Parowan Valleys. The State has already tried to reduce population pressures in these valleys by live-trapping and transplanting individuals elsewhere; these efforts, however, have not been successful in relieving the problem. The reason for the problem is that after the prairie dogs give birth to their young in the early spring, populations in the Cedar and Parowan Valleys swell to well over 20,000 animals. This great annual increment strains the carrying capacity of the habitat and results in conflicts with local ranching and farming interests. It is estimated that the prairie dogs do over \$1.5 million damage annually to agriculture in the area. Their high density also makes these animals vulnerable to outbreaks of disease like sylvatic plague that has occurred among overcrowded rodents elsewhere.

continued on page 8



Photo by A. Hardy

The habitat of another candidate, the Andrews' dune scarab beetle (*Pseudocotalpa andrewsi*), in southern California is subject to damage by off-road vehicle use, which disturbs the dunes and reduces the availability of the beetle's detrital food supply.

insects and land snails. Most candidates are found in only a single State; however, some are rare over ranges that include several States, particularly those candidates that occur in the east-half of the continental U.S.

The greatest numbers of candidate species are insects, and within that group the beetles are the most highly represented. This is consistent with our current knowledge of the insects and beetles as by far the most species-rich of all animal classes and orders, respectively. Most of the Category 1 species are snails, due mainly to the increased knowledge of these species resulting from surveys funded by the Service through Sections 4 and 6 of the Act.

Most of the extinct species (Category 3A) on the review list are clams, butterflies, moths, and Hawaiian wild bees. Several moth species dependent on the American chestnut tree for food have disappeared as their host plant suc-

cumbed to the introduced chestnut blight. Many other moth species, and much of the large genus of yellow-faced wild bees (*Nesoprosopis*) in Hawai'i, have failed to survive the introduction of bird predators, competing exotic insects, and competitors of native host plants in that previously isolated habitat. The high extinction rates shown for clams and butterflies may be partially a result of those groups being better known geographically than other groups. Many endemic butterflies occur in very small populations that are subject to extinction. For the clams, pollution and the loss of large flowing river habitat to impoundments have been the major causes of extinction.

The invertebrate review list was assembled by the Washington Endangered Species Office staff. Service regional and field offices then reviewed

continued on page 11



Photo by W.P. Mull

Hawai'i has more candidates in the invertebrate notice than any other State. One of these candidates, the Kaua'i cave amphipod (*Spelaeorchestia koloana*) or 'uku noho, is a small crustacean that is vulnerable due to its restricted distribution.

Two Arizona Plants Listed as Endangered

Two species of plants found only in the State of Arizona, the Arizona agave (*Agave arizonica*) and the Arizona cliffrose (*Cowania subintegra*), have been listed by the Service as Endangered, and now will receive protection under the Endangered Species Act.

Arizona Agave

Fewer than 100 plants of this species are known to exist in only 13 populations. The Arizona agave is an attractive succulent, with leaves growing up from the base in a somewhat flattened globular form, and its pale yellow, jar shaped flowers are borne on a stalk that can reach up to 3.6 meters in height. Due to its reduced numbers and range, its slow reproduction rate, and the continuing threats to its survival, the Arizona agave was proposed for listing as an Endangered species on May 20, 1983 (see BULLETIN Vol. VIII No. 6). This plant is endemic to a very small area of the New River Mountains in the Tonto National Forest, central Arizona.

Land use in this area consists of cattle grazing under U.S. Forest Service (USFS) permit. Cattle and deer browse the flowering stalks of agaves, and may play a role in the poor reproductive success of this species by eating the flower stalks before they mature and distribute seeds. Cattle grazing also may be having adverse impacts on the habitat in general. Taking of this plant for cultivation in private rock gardens and for commercial trade is another threat to its survival. Although taking was already restricted by State law and USFS regulations, these measures have been difficult to enforce, and the Endangered listing (F.R. 5/18/84) gives additional protection.

Arizona Cliffrose

The Arizona cliffrose is an evergreen shrub reaching 75 cm in height, with small white or yellow flowers. Its leaves, twigs, and flowers are covered with dense, short, white hairs. This distinctive species is known from only two small populations totalling about 700 plants. It was proposed on July 15, 1983, for listing as Endangered (see BULLETIN Vol. VIII No. 8), and the rule became final on May 29, 1984.

The first population occurs on about 600 acres in the Burro Creek area of Mohave County, and the second is scattered over approximately 100 acres in Graham County. Both are located on lands administered by the Federal Government (Bureau of Land Management and Bureau of Indian Affairs) and the Arizona Department of Transportation. The Burro Creek population is heavily browsed by cattle, mule deer, and feral burros. Mining is another threat to the species' survival; currently, there are 114 BLM mining claims within a mile radius of the Burro Creek plants. Areas within the population have been bladed, apparently to expose subsurface formations for mineral explorations. Gas pipelines, electricity transmission lines, and a road also pass through the area, and maintenance procedures involve occasional blading. A portion of the Graham County population occurs on a highway right-of-way and could be affected by any road widening or herbicide spraying; however, there are currently no plans to widen the highway, and the Arizona Department of Transportation has agreed to notify the Service if any of its future activities could adversely impact the population.

As Endangered species, both the Arizona agave and the Arizona cliffrose will receive protection under the Endangered Species Act. The listings give recognition to the precarious status of these plants, require the development of plans for their recovery, and make possible Federal aid to cooperative State conservation activities. Further, under Section 9 of the Act, it is illegal to remove and reduce to possession Endangered plants from areas under Federal jurisdiction. This measure now applies to the Arizona agave which occurs only on USFS lands, and to the Arizona cliffrose which is found on BLM and BIA lands. Section 9 also prohibits interstate or international trafficking in Endangered plants. Permits for otherwise prohibited activities involving Endangered species are available, under certain circumstances, for approved scientific or conservation purposes.

Designations of Critical Habitat were not included in the final rules because publishing the required maps and habitat descriptions would make both plants vulnerable to vandalism and illegal taking. The agave, in particular, is subject to overcollection as an ornamental plant. Nevertheless, these plants will receive the full protection offered under Section 7 of the Act. Federal agencies are required to ensure that any action they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species by directly affecting them or adversely modifying their habitat. USFS regulations on the protection of listed species like the Arizona agave are compatible with the purposes of the Act, and the BLM is planning for the Arizona cliffrose in its management documents.

Utah Prairie Dog

continued from page 7

In the past, ranchers and farmers poisoned the prairie dogs in great numbers to control damage, but since the species has been listed as Endangered such activities have been illegal. It is now feared that prairie dog numbers have increased so greatly in the Cedar and Parowan Valleys that local interests may feel forced to use illegal means to obtain relief. Under the new regulation, the State of Utah will supervise control activities that will reduce the number of prairie dogs by up to 5,000 animals annually, by which it hopes to relieve pressures on the ranchers to take illegal

action. The State will not allow poison to be used in the control program, and most of the animals taken will be juveniles, the majority of which would die anyway by the end of the year. (The natural die-off occurs in the late fall and winter when most of the agricultural damage has already been done.) State officials assure the Service that if legal control is not permitted, they would not be able to prevent illegal poisoning of large numbers of animals. If that were to happen, far more than the 5,000 to be taken annually under the new regulation would undoubtedly be illegally poisoned, and the species might again become in danger of extinction. Thus, the new regulation is a conservation oriented move that is essential to relieve population pressures in the Cedar and

Parowan Valleys that cannot be relieved in any other way.

The State of Utah will continue to monitor and census Utah prairie dog populations, and will report numbers taken in the Cedar and Parowan Valleys at regular intervals to the Service. If at any time the Service receives substantive information that the removal of 5,000 animals annually from these valleys is proving detrimental to the species, it may immediately halt further take. Aside from the taking authorized with the special regulation, all other protective measures previously covering the Utah prairie dog and its habitat will remain in effect.

Desert Fishes

continued from page 5

introductions, they could be rehabilitated as part of a recovery effort for the subspecies. These springs were proposed for designation as Critical Habitat.

Comments on the proposals to list the White River spinedace (due July 3, 1984) and springfishes (due July 6, 1984) are invited and should be addressed to the Region 1 Director (address on page 2).

Desert Pupfish

Another species that has adapted to extreme environmental conditions is the desert pupfish (*Cyprinodon macularius*). This fish has been known to survive water temperatures greater than 110°F, oxygen levels as low as 0.1 parts per million, and salinities nearly twice that of seawater. Unfortunately, as hardy as the desert pupfish is, it cannot tolerate the effects of exotic fishes or heavy damage to its habitat.

Historically, this species was common in parts of the lower Colorado River drainage, particularly in springs, marshes, tributary streams, and slow-moving stretches of four large rivers. Recent surveys, however, show that the desert pupfish has been drastically reduced in numbers and distribution. It therefore has been proposed for listing as Endangered (F.R. 5/16/84).

The distribution of the desert pupfish has been reduced to short stretches of Salt Creek, San Felipe Creek and the associated San Sebastian Marsh, and a few areas along the Salton Sea, all in southern California; Quitobaquito Spring in Organ Pipe Cactus National Monument in southern Arizona; and the Sonoyta River drainage and Santa Clara Slough in northern Sonora, Mexico.

Populations in most of these remaining areas have been reduced to such low levels that their prospects for long-term survival are considered poor. Intensive development and use of the limited surface and ground water resources for irrigation has seriously damaged much of the habitat. Geothermal drilling is another threat; Federal lands around Salt Creek already have been leased for geothermal exploration, and lease applications for tracts near San Sebastian Marsh have been filed with the Bureau of Land Management.

Several exotic fishes known to prey on and compete with the desert pupfish have become established in the Salton Sea and other parts of the species' historical range. A brackish water snail of the Thiariidae family recently was introduced on the northern periphery of the Salton Sea where it could compete with desert pupfish for food, consume pupfish eggs, and transmit parasites. Desert pupfish in the Salton Sea area already have been infested with a parasitic copepod (anchor worm) of the Lernaeidae family, accidentally introduced with an exotic fish. There is even the potential that an exotic aquatic weed, *Hydrilla verticillata*, could invade pupfish habitat from the nearby All American Canal, where it was recently introduced, and control methods (including chemical treatments) could have an impact on the pupfish. Water quality in some parts of the pupfish range already has been degraded by pesticides used on nearby farmlands.

The proposed Critical Habitat for the desert pupfish includes about one-half acre of aquatic habitat at Quitobaquito Spring, approximately 11 miles of stream channel along San Felipe Creek and two of its tributaries, and 100-foot riparian buffer zones. Pupfish popula-

continued on page 11

Petition Findings on Two Reptiles

The Service has published (F.R. 5/18/84) its initial findings on the substantiality of information presented in petitions to delist the yacare caiman (*Caiman crocodylus yacare*) and to list Harter's water snake (*Nerodia harteri*) under the provisions of the Endangered Species Act.

The yacare has been listed since 1970 as Endangered, and this crocodilian is native to parts of Argentina, Brazil, Bolivia, and Paraguay. A petition to delist the yacare was received on December 27, 1983, from Mr. Steven H. Mosenson, who submitted it on behalf of the Reptile Skin Industry Trade Association. The Service carefully reviewed the petition and the documents submitted with it in support of the petitioned action, and concluded that they do not present credible, substantial biological or commercial data to indicate that a delisting may be warranted. In order to clarify the yacare's status in the wild, the Service is cooperating with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in developing a 2-year survey to be conducted under the auspices of CITES, the International Union for the Conservation of Nature and Natural Resources—Crocodile Specialist Group, and the Governments of Brazil, Bolivia, and Paraguay. If the survey yields data indicating that the status of the yacare is more secure than now believed, it could be proposed for reclassification or delisting.

Harter's water snake is known only from central Texas. A petition to list both subspecies of this snake as Threatened with Critical Habitat was received February 14, 1984, from Mr. Ted L. Brown of the New Mexico Herpetological Society. Mr. Brown based his petition on two status reports that had been submitted to the Service under contract by Dr. Terry Maxwell of Angelo State University. After examining the petition, the Service found that it does contain substantial biological information to indicate that a listing under the Act may be warranted. The required status review on Harter's water snake actually began earlier with the Service's December 30, 1982, notice of review on certain vertebrate species. Any data on this snake will be welcomed, particularly information on taxonomy, distribution, threats to its survival, and any recommended Critical Habitat. Information should be mailed to the Associate Director-Federal Assistance, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. In accordance with the Act, the Service must decide by February 28, 1985, if the species should be proposed for listing.



Photo by C. Kenneth Dodd, Jr.

Desert pupfish habitat in Quitobaquito Spring (Organ Pipe Cactus National Monument, Arizona) is jeopardized by the airborne drift of chemicals that are sprayed on agricultural lands in nearby Mexico.

Three Plants

continued from page 3

measures as research and land acquisition, provisions of the Endangered Species Act would offer the additional protection needed for this plant and its habitat.

Proposed Critical Habitat for the large-flowered fiddleneck is in San Joaquin County, California. With a steep west- and south-facing slope in a light-textured but stable soil, the proposed area will, at least, satisfy the fiddleneck's short-term physiological needs essential to its conservation. The area proposed exceeds the current range of the plant and contains places suitable for expansion or relocation which will increase the plant's chances for recovery. One Federal action that could have an effect on the Critical Habitat is Department of Energy funding of certain research, including the testing of explosives, at the University of California's Lawrence Livermore Laboratory.

Comments on the proposal to list the fiddleneck as Endangered should be submitted by July 9, 1984, to the Region 1 Director. (See page 2 of the BULLETIN for the address.)

Last Chance Townsendia

The Last Chance townsendia, a herbaceous perennial that grows less than one inch tall, is a member of the sunflower family, Asteraceae. Stems of this plant grow from an underground base and branch to form a dense mat or tuft low to the ground. The flower heads are about 3/4 of an inch wide with almost no stalk and have distinctive yellow to golden rays. The golden ray florets make this plant unusual in its genus; ray florets of the other known taxa are white, blue, red, or pale yellow.

Townsendia aprica has never been abundant. At present, there are only three known populations within a 12-mile radius. Most of the plants are on public lands administered by the Bureau of Land Management (BLM) in Sevier and Emery Counties, Utah. The species occurs on heavy clay soils partly underlain by coal, which makes it subject to disturbance by mining activities. Populations are threatened also by off-road vehicles, oil and gas exploration, and cattle grazing and trampling. Because only 220 individuals are known to exist, this species appears highly vulnerable to ecological and genetic fluctuations.

The Last Chance townsendia is not currently protected by any Federal or State laws or regulations. Although populations exist on BLM lands, the Bureau is not legally obligated to regulate activities so as to provide for the conservation of the species.

The Service finds that designation of Critical Habitat is not prudent for the

Last Chance townsendia at this time. Listing alone highlights the rarity of a plant and can attract the attention of vandals. Publication of Critical Habitat descriptions and maps, together with the publicity of listing, would single out the location of each population and make this species even more vulnerable and increase enforcement problems.

Comments on this proposal should be received by July 30, 1984, at the office of the Region 6 Director (address on page 2).

Sacramento Mountains Thistle

The Sacramento Mountains thistle, a perennial species that grows 1-2 meters tall, has purple, highly branched stems, and long leaves that have deep, narrow, pointed lobes. Many purple flower heads form on each plant, mostly during July and August. Most of the populations occur on steep calcium carbonate deposits adjacent to flowing springs.

Cirsium vinaceum is known only from the Sacramento Mountains of south-central New Mexico. Fourteen populations of the thistle are presently known, with a combined total of 2,000-3,000 plants. Most of the populations are located in the Lincoln National Forest, several are on private lands, and one is on the Mescalero Indian Reservation. The proposal to list the Sacramento Mountains thistle as a Threatened species is due to habitat destruction by livestock and water development, competition with introduced plant species, road construction, logging, and recreational activities.

Since most populations of the thistle occur on Federal land, the Service has determined that the species would benefit from a designation of Critical Habitat. The proposed Critical Habitat area includes Lincoln National Forest lands, Mescalero Apache Indian lands, and private lands encompassing considerably more area than is currently occupied by *Cirsium vinaceum*. The Service believes that this entire area is essential to the conservation of the species because it is large enough to allow for expansion of the plant as a result of recovery efforts.

Comments on the proposal to list *Cirsium vinaceum* are due by July 16, 1984, to the Service's Region 2 Director (address on page 2).

Effects of the Listings if Approved

If the proposals are made final, all three plants will receive protection under the Endangered Species Act of 1973, as amended. Conservation measures provided to species listed as Endangered or Threatened under the Act include recognition, recovery actions, requirements for Federal pro-

tection, and prohibitions against certain practices.

Because these species have been proposed for listing, Federal agencies are required under Section 7 to confer (a non-binding procedure) with the Fish and Wildlife Service on any action they fund, authorize, or carry out that is likely to jeopardize the survival of the proposed species or adversely modify their habitats. If the proposed listings are made final, this protection against adverse Federal actions will be strengthened.

Interstate and international trafficking in these plants will be prohibited with certain exceptions if they are listed. In addition, the Act makes it unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction, and this protection will be extended to Threatened plants once implementing regulations are completed.

Regional Briefs

continued from page 3

deaths attributed to natural causes, and probably an equally large portion of the deaths where the causes could not be determined, was the result of extremely cold weather during the last week of December 1983. Coincidentally, 73 manatees were known to have died also in the first four months of 1982, a year that established a record high mortality of 123 animals. Most of those deaths were attributed to a red tide outbreak in the Ft. Myers, Florida, area.

Preliminary results have been compiled from comments received concerning Dr. Jane Packard's "Proposed Research/Management Plan for Crystal River Manatees." The plan was written by Dr. Packard under a contract funded by the Fish and Wildlife Service and the Marine Mammal Commission to serve as a prototype for subsequent research/management plans developed for other manatee populations located around the State of Florida. The plan includes a summary with pictures and illustrations, sections on goals and objectives, management alternatives and recommendations, and background information and research data used to formulate the alternatives and recommendations. Copies of the summary are available at the Office of Endangered Species, Jacksonville Field Station, 2747 Art Museum Drive, Jacksonville, Florida 32207.

Region 5—Roger Hogan of the Region 5 Endangered Species Office and Judy Jacobs of the Annapolis, Maryland, Field Office inspected habitat of the Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) at the Great Dismal Swamp National Wildlife Refuge in Vir-

nia. This inspection was conducted as a final review prior to submitting a listing proposal for the species.

Staff members from the Region 5 and Washington Endangered Species Office attended the annual meeting of the Virginia Round-leaf Birch (*Betula uber*) Committee at Jefferson National Forest. Discussions centered around the current status of recovery efforts undertaken for the tree which include seedling cultivation at Virginia Polytechnic Institute green-house facilities and the establishment of birch populations in the Jefferson National Forest. Some discussion was focused also on the loss of approximately 24 2-year-old seedlings due to apparent vandalism. Since the seedlings were located on private property, the State of Virginia is investigating.

Region 7—The Alaska Endangered species staff and Assistant Regional Director, Jon Nelson, met with representatives from the Bureau of Land Management (BLM) and Alyeska Pipeline Service Company to discuss Alyeska's proposal to conduct oil spill drills, routine surveillance, and general maintenance work along the Trans-Alaska Pipeline. Alyeska is seeking liberalization of protection measures established by BLM and the Fish and Wildlife Service to protect nesting Arctic peregrine falcons (*Falco peregrinus tundrius*). Of particular concern is Alyeska's proposal to use helicopters for repeated, low-level surveillance flights along the pipeline corridor which traverses nesting habitat of at least four pairs of peregrines. Alyeska has pointed out that, without careful monitoring of the pipe-

line, a leak could go undetected and cause considerable environmental damage.

A compromise was reached whereby Alyeska could conduct its activities as proposed, if it provides an experienced raptor biologist to observe and record the behavior of peregrine falcons present. The biologist's findings would then be used to further define the level of protection needed by peregrines at these specific nest sites.

Invertebrate Species

continued from page 7

the draft list and suggested additions or deletions of species, as well as alternative category designations. All invertebrate species that have been subjects of previous Service notices and proposed rules published in the *Federal Register*, or have been the subject of a petition to classify them as Endangered or Threatened, have been placed on the review list. Other species on the review list have been subjects of Service-conducted or funded literature and field surveys, or were taken from State "endangered" lists or lists produced by endangered species symposia conducted by professional societies and States.

The Service considers this review list a working document. Category numbers of species will be revised on the basis of appropriate new information gathered by, or submitted to, the Service. The Service is accordingly soliciting any information that might change the category number of any of these species. Such information and other comments may be submitted to the Washington

Office or any of the Service's regional or field endangered species offices.

Desert Fishes

continued from page 9

tions in these areas appear to have the best chances for survival. Potential Federal actions that could affect the pupfish and its habitat include, but are not limited to, issuance of permits for mineral and geothermal exploration, grazing, and construction of irrigation systems; stream channelization of San Felipe Creek for flood control; and development for recreation.

Comments on the proposal to list the desert pupfish as Endangered are invited and are due to the Region 1 Director by July 16, 1984.

If the above proposals are made final, the seven desert fishes will be listed as Threatened or Endangered species and will benefit from the protection authorized under the Endangered Species Act. Increased status recognition, possible funding of cooperative State conservation programs, the development of recovery plans, protection from adverse Federal activities, and prohibitions against certain practices that might harm listed species are among the conservation measures available.

Regulations implementing the Act, 50 CFR 17.21 and 17.31, describe a series of prohibitions and exceptions that generally apply to all Threatened or Endangered wildlife. These prohibitions, in part, make it illegal to take, possess, sell,

continued on page 12

CITES News

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—

Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, ensuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species.

The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Call for CITES Information

Two researchers with the International Union for the Conservation of Nature and Natural Resources (IUCN), Laura H. Kosloff and Mark C. Trexler, are analyzing CITES implementation and would appreciate receiving:

- copies of or citations to any material discussing CITES issues, either in general or with respect to a particular country;
- information on national legislation implementing CITES in individual countries, as well as information regarding its strengths and weaknesses in implementing CITES; and
- personal and organizational views on CITES in general, its trends, the functioning of the Secretariat, its imple-

mentation and regulations, and its scope and goals.

Information and views from all sides of the various issues are crucial to the ultimate usefulness of this research and would be greatly appreciated. Confidentiality of information can be maintained. Please send information and responses to: Mark C. Trexler, Research Associate, International Union for Conservation of Nature, Avenue du Mont-Blanc, 1196 Gland, Switzerland.

Desert Fishes

continued from page 11

or engage in interstate or international trafficking in listed organisms except under permit. They will apply to all of the fishes proposed for listing as Endangered species; however, Section 4(d) of the Act authorizes more flexible regulations for the conservation of Threatened species. Since the fishes proposed for listing as Threatened—the Pecos bluntnose shiner, the Warner sucker, and the desert dace—are jeopardized primarily by habitat disturbance rather than direct taking, special rules will allow the take of these fishes without a Federal permit if a State collection permit is obtained and all State wildlife regulations are satisfied. Such taking must be for scientific, propagation, educational, and other conservation purposes consistent with the Endangered Species Act; take for any purpose not enumerated in the special rules will be prohibited. Incidental catch of these fishes by licensed anglers will not be subject to prosecution if the fish are returned to the water.

The seven desert fishes will also benefit from Section 7 of the Act, which requires Federal agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of Threatened or Endangered species or to adversely modify their Critical Habitats. Under Section 7, this protection applies also to those species for whom Critical Habitat has not been designated.

Ferret Workshop

The University of Wyoming, U.S. Fish and Wildlife Service, and Wyoming Game and Fish Department are cooperating in sponsoring a Black-Footed Ferret Workshop, to be held at the University of Wyoming campus on September 18-19, 1984. Biologists will

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	19	233	3	0	22	292	21
Birds	52	14	144	3	0	0	213	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	4
Fishes	30	3	11	12	1	0	57	30
Snails	3	0	1	5	0	0	9	6
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	5
Plants	60	3	0	9	2	2	76	23
TOTAL	205	45	459	48	9	37	803	151**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

** More than one species may be covered by some plans.

Number of Recovery Plans approved: 129

Number of species currently proposed for listing: 34 animals
30 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 40 fish & wildlife
13 plants

May 31, 1984

discuss recent management and research of ferrets in northwestern Wyoming, and panel discussions will be conducted by authorities in the field to discuss future needs. The opening remarks will be made by Dr. Donald Dexter, Director of the Wyoming Game and Fish Department. Invited scientists include members of the Black-Footed Ferret Advisory Team, the Black-Footed Recovery Team, Wyoming Game and Fish Department, university researchers, private researchers, and others.

People interested in attending the workshop may write Conferences and Institutes, P.O. Box 3972, University Sta-

tion, Laramie, Wyoming 82071 for registration information. There is a \$20 registration fee to cover costs. Participants are responsible for their own lodging and meals, both of which are easily obtained in Laramie. The workshop proceedings will be printed by the Wyoming Game and Fish Department.

June 1984

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES

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Four Plants Proposed for Listing

Another four plants have been proposed by the Service for addition to the list of Endangered and Threatened species. If the proposals are made final, the total number of plants given protection under the Endangered Species Act will increase to 80.

San Mateo Thornmint

Proposed for listing as an Endangered species (F.R. 6/8/84) is the San Mateo thornmint (*Acanthomintha obovata* ssp. *duttonii*), a member of the mint family. It is known to exist only as one small population of 2,000-3,000 individual plants in Edgewood County Park near Redwood City, California. Historically, this subspecies also grew on grassy serpentine hillsides in locations scattered throughout San Mateo County, California. Populations at these other sites have been destroyed, however, presumably by urban development, road construction, and other land development activities.

The remaining population of this subspecies is being affected by unauthorized and uncontrolled recreational activities in Edgewood Park, such as habitat disturbance by ORVs and trampling by pedestrian and horseback traffic. Other uses currently being considered for the park include opening day camps, establishing picnic areas, and developing a golf course, all of which have the potential to affect the surviving thornmint population by reducing the extent of undeveloped land and thus increasing the intensity of recreational ORV use on what will remain.

The thornmint is listed as an endangered species by the State of California; however, State law principally addresses restrictions on trade and salvage of plants when there is a change in land use. Federal listing would provide the additional protection necessary to ensure survival of this plant in its natural habitat.

A designation of Critical Habitat is not being proposed for the San Mateo thornmint. This decision is based mostly on the fact that a portion of this limited population was removed during the

spring of 1983. It is not known who removed individuals of the thornmint or for what purpose they were removed, but because underlying soil was also taken, it is suspected that an attempt was made to transplant individuals of the subspecies. Since Critical Habitat designation requires the publication of maps specifically indicating its location, the Service feels that such designation is not prudent at this time because it could lead to further removal of plants, ultimately contributing to the taxon's decline.

Comments on this proposal should be received by August 17, 1984, at the office of the Field Supervisor, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E1823, Sacramento, California 95825.

Welsh's Milkweed

A member of the family Asclepiadaceae, the Welsh's milkweed (*Asclepias welshii*), is known to occur only in the Coral Pink Sand Dunes area and in an area known as the Sand Hills to the northeast, both in Kane County, southern Utah. This plant is a herbaceous perennial that grows up to 10 cm tall and has large, oval leaves and cream-colored flowers with a rose-tinged middle. The species grows on open, sparsely vegetated sand dunes and on

continued on page 4



The San Mateo thornmint is known to exist only as one small population in Edgewood County Park, California.

Proposed Threatened Status for Two Desert Fishes

During June 1984, the reduced status of another two desert fishes was recognized by the Service as proposals to list them as Threatened species were published in the *Federal Register*. Both the Fish Creek Springs tui chub (*Gila bicolor euchila*) and the Sonora chub (*Gila ditaenia*) are jeopardized by habitat degradation and the introduction of exotic fishes. The proposals bring to 18 the number of desert fishes now being considered for listing as Endangered or Threatened under the Endangered Species Act, in addition to the 30 desert fishes already listed.

Fish Creek Springs Tui Chub

G. b. euchila is known only from Fish Creek Springs, located in the Little Smoky Valley of Eureka County, Nevada, and is the only fish native to the spring system. This relict subspecies of tui chub once occurred in large numbers within the four formerly interconnected springs and their outflows, which comprise Fish Creek. Unfortunately, however, *G. b. euchila* has declined substantially in range and numbers due primarily to two factors. Introduced rainbow trout (*Salmo gairdneri*) and brook trout (*Salvelinus fontinalis*) prey extensively on the native tui chubs and restricted them to spring pools in areas of dense aquatic vegetation. The habitat also has been degraded by cattle overgrazing the vegetation that surrounds the spring system. This overgrazing contributes to siltation from the erosion of adjacent lands, and generally degrades water quality. Overgrazing also reduces plants that provide cover and are a source of insects, upon which the tui chub feeds. In addition, one springhead has been drastically altered to provide a livestock watering tank, and is no longer connected to the spring system.

By July 1983, biologists surveying the Fish Creek Springs system found tui

continued on page 7



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of June:

Region 1—The Sacramento Endangered Species Staff participated in a meeting of the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) Recovery Team and surveyed portions of San Antonio Creek

that may be affected by proposed oil exploration and road repair projects. Sticklebacks were discovered in several isolated pools in and above Barka Slough that may soon dry up because of the extremely low precipitation in the basin this year. In response to this discovery, 850 sticklebacks were translocated from these pools into Honda

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Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500); Harvey Nelson, *Regional Director*; John S. Popowski, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist*.

Region 4, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583); James W. Pulliam, *Regional Director*; John I. Christian, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist*.

Region 5, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100); Howard Larsen, *Regional Director*; Stephen W. Parry, *Assistant Regional Director*; Paul Nickerson, *Endangered Species Specialist*.

Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209); Galen Buterbaugh, *Regional Director*; John D. Green, *Assistant Regional Director*; Barry S. Mulder, *Endangered Species Specialist*.

Region 7, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-786-3542); Robert E. Putz, *Regional Director*; Jon Nelson, *Assistant Regional Director*; Dennis Money, *Endangered Species Specialist*.

U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Creek on Vandenberg Air Force Base. That translocation had previously been recommended by the recovery team; approved by Vandenberg officials, and incorporated into the stickleback recovery plan, but was deferred until now because of the unavailability of surplus donor stock.

* * *

The Sacramento staff assisted The Nature Conservancy (TNC), Oregon Department of Fish and Wildlife, and the Bureau of Land Management (BLM) in developing a water management plan for Borax Lake in Harney County, Oregon. TNC has acquired a lease to Borax Lake in order to protect the Endangered Borax Lake chub (*Gila boraxobius*). The plan emphasizes the security of Borax Lake for the chub and the need for restoration of marshes around the lake. To these ends, an artificial channel from Borax Lake to a nearby reservoir will be partially filled and some water will be diverted into now-dry marsh habitat.

* * *

The Sacramento staff met with BLM and State officials in Ukiah, California, to evaluate study proposals and select a contractor for the *Arabis mcdonaldiana* (McDonald's rock-cress) study at Red Mountain. The study is intended to provide information on the plant's ecology and life history, and assist in the determination of essential habitat for this species. It will provide information critical to developing an appropriate management plan for the *Arabis* populations on public land on Red Mountain, and assist with the species' recovery.

* * *

Egg clutches were collected from 28 California peregrine falcon (*Falco peregrinus*) nests during April and May as part of the continuing effort to improve wild reproduction. Of the 103 collected, 54 eggs were viable, 26 were dead, and 28 had already broken in the nests prior to collection. Artificial eggs were placed in the nests until nestlings can be fostered. All eggs were transferred to the Santa Cruz Predatory Bird Research Group for artificial incubation. Nestlings hatched either from wild eggs or from captivity-produced eggs will be fostered to the wild pairs. DDE contamination continued to be a major factor in lowering reproductive success of wild peregrines in California.

* * *

During a successful field trip to work on *Mirabilis macfarlanei* (McFarlane's four-o'clock), two new colonies of

continued on page 6

Gulf Coast Beach Mice Proposed for Listing as Endangered

Three subspecies of beach mice endemic to the Gulf Coast of southern Alabama and northwestern Florida have been proposed by the Service for listing as Endangered (F.R. 6/7/84). The Alabama beach mouse (*Peromyscus polionotus ammobates*), Perdido Key beach mouse (*P. p. trissyllepsis*), and Choctawhatchee beach mouse (*P. p. allophrys*) are in danger of extinction due to destruction of their sand dune habitat by residential and commercial development, recreational activity, and tropical storms. The proposal, if approved, will give these animals protection under the Endangered Species Act of 1973.

Beach mice have small bodies, haired tails, relatively large ears, protuberant eyes, and coloration that blends well with the sandy soils and dune vegetation of their habitat. The Alabama beach mouse, also called the Alabama Gulf Coast beach mouse or white-fronted mouse, has an average overall length of 5 inches, pale gray upper parts, and white underparts and tail. The Perdido Key beach mouse, also referred to as the Perdido Bay or Florala beach mouse, measures an average of 5 inches from head to tail. Its upper parts are grayish fawn to wood brown with a pale yellow hue, underparts are white, and its tail ranges from white to pale grayish brown. In the Choctawhatchee beach mouse, overall length averages 5.2 inches and the upper parts are orange-brown to yellow-brown. Like the Alabama and Perdido Key beach mice, the underparts of this mouse are also white.

Human and natural alterations of coastal ecosystems have resulted in severe declines of beach mice. Most of the suitable habitat has been lost because of residential and commercial development, recreational activity, beach erosion, and vegetational succession. Competition from introduced house mice (*Mus musculus*) and predation by domestic cats (*Felis catus*) also seem to be causing problems. In addition, tropical storms are a constant threat to the reduced populations of beach mice. Hurricanes Eloise (1975) and Frederick (1979) were especially bad, destroying large areas of habitat for all three subspecies.

Several recent status surveys and habitat analyses have indicated that the situation continues to worsen. All three beach mice historically ranged along approximately 103 miles of coastal sand dunes in Baldwin County, Alabama, and Escambia, Okaloosa, Walton, and Bay Counties, Florida. At present, they are

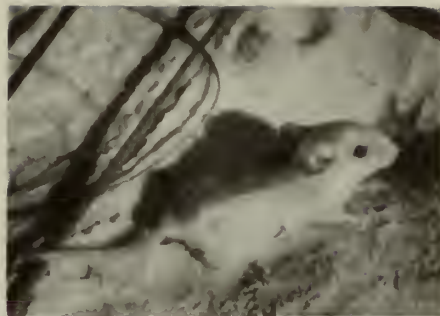


Photo by Dr. Julian L. Dusi

Destruction of their sand dune habitat has resulted in severe declines of beach mice.

found along not more than 26.6 miles of Gulf Coast dunes, or approximately one-fourth of the original range.

The major threat to beach mouse habitat continues to be human destruction of the coastal sand dune ecosystem for commercial and residential development. This development often isolates small areas of habitat, thereby fragmenting populations and upsetting gene flow. High density multiple housing can act as a barrier to migration between populations. If any such population segment is extirpated, it cannot be replaced by natural immigration. In addition to residential and commercial development, recreational use of the sand dunes by pedestrians and vehicles can destroy vegetation essential for dune development and maintenance. Such loss of vegetation results in extensive wind and water erosion, reducing the effectiveness of coastal dunes as a protective barrier and ultimately destroying beach mouse habitat.

Current controls affecting development in Gulf Coast sand dunes do not make any special provisions for beach mouse habitat protection. They do not prevent development in such habitat, or deal with the specific needs of the mice in relation to development, but simply establish general requirements for the siting and construction of buildings, utilities, and access corridors.

The Service has proposed a designation of Critical Habitat for the Alabama, Perdido Key, and Choctawhatchee beach mice as part of the listing proposal. This area encompasses 38.3 miles of coastline in Baldwin County, Alabama, and Escambia, Walton, and Bay Counties, Florida. If the listing and Critical Habitat proposal is approved, Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued survival of the beach mice or adversely modify their Critical Habitat. Among the Federal actions that could be affected by the proposal are the Federal flood insurance program, Federal construction loans, and certain U.S. Army Corps of Engineers projects. It should be emphasized that a Critical Habitat designation would not necessarily rule

out such actions. Considering the needs of listed species early in the planning process usually means that potential problems can be addressed by modifying, not halting, an action.

In addition to the habitat conservation measures mentioned above, listing the three beach mice would bring other benefits. It would draw attention to their precarious status, mandate development of a recovery plan, and possibly provide for Federal aid to cooperative State conservation programs. In addition, listing them as Endangered would make it illegal to take, possess or engage in interstate or international trafficking in these mammals, except under permit for scientific or conservation purposes. Listing the three beach mice as Endangered also might spur completion of the Service's Bon Secour National Wildlife Refuge in Alabama, which contains some beach mouse habitat. So far, about 2.6 miles of beach mouse habitat on the refuge have been acquired within the 3.7 miles authorized by Congress.

Comments on this proposal are due by August 6, 1984, to the Endangered Species Field Supervisor, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207.

Black Market in Protected Birds Exposed

Fish and Wildlife Service special agents, along with State conservation officers, arrested more than 30 individuals in 14 States in a crackdown against illegal commercialization in birds of prey. This action culminates a 3-year undercover investigation that exposed a thriving black market in federally protected birds. Agents were able to infiltrate the networks of individuals involved in illegal raptor taking and trading, and to obtain evidence of violations by subjects throughout the United States. The operation was carried out by 150 Service special agents and an equal number of State wildlife officers who served search and arrest warrants in Arizona, California, Colorado, Idaho, Illinois, Louisiana, Minnesota, Missouri, Montana, Nevada, New Mexico, New York, Texas, and Utah. Those arrested were charged with violating various Federal wildlife statutes as well as smuggling, conspiracy, and mail fraud. Agents also seized a large number of live raptors such as gyrfalcons (*Falco rusticolus*) and Endangered peregrine falcons. In total, more than 80 felony charges are pending.

Four Plants Proposed for Listing

continued from page 1

the lee slopes of the dunes in the shade of trees.

Approximately 8,500 individuals are currently known to exist, but these remaining plants are in danger of extinction due to off-road vehicle (ORV) activity and livestock grazing. In some areas, livestock affects more than 50 percent of the plants. This high incidence of grazing is much more than many species can tolerate. Another factor affecting the continued existence of *Asclepias welshii* is the fragile nature of the habitat. The dunes are easily degraded by surface disturbances and are subject to effects from activities on adjoining lands. Given the severity of the threats to this species, along with its limited distribution and small numbers, the Service has proposed to list the Welsh's milkweed as Endangered (F.R. 6/6/84). Currently, there are no Federal, State, or local laws or regulations that provide for the protection of this species.

A designation of Critical Habitat is also part of this proposal. Since most of the plants are known to occur on Federal lands and are not subject to commercial or private collecting pressures, the Service feels that *Asclepias welshii* would benefit from such a determination. The area proposed includes the entire habitat currently occupied by the species in Kane County, Utah, in both the Coral Pink Sand Dunes and in a small area in the Sand Hills.

Comments on the proposal to list this plant are invited from all interested agencies, organizations, and individuals, and are due to the Regional Director, Region 6 (address on page 2 of the BULLETIN) by August 6, 1984.

Beautiful Goetzea

The beautiful goetzea (*Goetzea elegans*) is found only in the semi-evergreen seasonal forests that occur on limestone in northern Puerto Rico. Only 59 plants are known to exist, some on land owned by the Government of the Commonwealth of Puerto Rico and others on privately owned land. The continued existence of this species is being threatened mostly by road construction, periodic trimming of roadside vegetation, and clearing of forests for cattle pastures.

Goetzea elegans was discovered in 1827 and is named for the German theologian J. E. Goetze. The species is an evergreen shrub or small tree that grows up to 30-40 feet tall with stems up to 8-10 inches thick. The leaves of this species are simple, alternate, and 2-4 inches long and 1-2 inches wide. Flowers and fruits have been observed on the beauti-



Photo by J. Vivaldi

This flower of the *Goetzea elegans* represents the first known photograph of this species in bloom. Until recently, blossoms had not been observed since 1936.

ful goetzea in the months of May to August. Usually a single orange flower is borne on a curved stalk in the leaf axil and there may be several terminal flowers which are symmetrical and funnel-shaped. The fruits are one-seeded, orange, and about 3/4 of an inch in diameter.

In August 1979, the Fish and Wildlife Service contracted Dr. José L. Vivaldi, a resident botanist of Puerto Rico, to conduct a status survey of some plants thought to be candidates for listing as endangered or threatened in Puerto Rico and the Virgin Islands. Reports and documentation resulting from this survey recommended that *Goetzea elegans* be proposed for listing as an Endangered species. The Service has now issued a proposed rule to this effect (F.R. 6/18/84), which is the first for a Puerto Rican plant.

The beautiful goetzea is currently known from only three sites, all in the Quebradillas area of northern Puerto Rico. Two of these sites are located in the Guajataca Gorge, and the third is a few miles to the east. Of the two sites in the gorge, one is privately owned. The other is a road site owned and managed by the Commonwealth Department of Transportation and Public Works, and consists of one or two adult plants and three or more root suckers. This site is periodically cleared of vegetation during routine road maintenance, which results in serious habitat disturbance. This practice has resulted in the plant's stunted growth and lack of flowers, fruits, and siblings. The second site in Guajataca Gorge is a quarter of a mile from the first, on a hillside near the road, and contains about six plants. (In 1955, this site had about 30 adult plants.) The site is threatened by destruction and modification due to road construction, stone quarrying, and other development.

The third site is located in a ravine several miles east of the gorge, and contains the largest population of the beautiful goetzea. Over 30 plants have been

located, measured, and tagged. Most of the site has been cleared for pasture and the original vegetation destroyed. The beautiful goetzea is found in the remaining undisturbed area. Population pressure and the need for pasturelands could force further clearing in the area. This site contains the largest known specimens, and the only that are known to have produced flowers and fruit since 1936.

The Service has determined that designation of Critical Habitat for *Goetzea elegans* is not prudent at this time. Publication of Critical Habitat localities along the roads where the species occurs would increase the risk of taking or vandalism.

The only known Federal activities that could be affected by any final rule to list the beautiful goetzea as an Endangered species are those of the Federal Highway Administration. In the event that highways are widened or resurfaced in this area, a strong commitment will be needed to protect the species. Without the protection provided by the Endangered Species Act, *Goetzea elegans* could be brought to extinction or its habitat substantially modified.

Comments on this proposal are due to the Ecological Services Field Supervisor, U.S. Fish and Wildlife Service, P.O. Box 3005 - Marina Station, Mayaguez, Puerto Rico 00709-3005, by August 17, 1984.

Mancos Milk-vetch

A member of the pea family, *Astragalus humillimus* (the Mancos milk-vetch) is a perennial species with small compound leaves composed of many oval, light green leaflets and lavender flowers that have a sweet, pungent fragrance. It grows in low, tufted mats 31-45 cm in diameter. The species currently is known in small numbers only from a ridge west of Waterflow in San Juan County, New Mexico, where it is threatened by habitat disturbance.

All three populations, which total about 7,000 plants, occur on Navajo Indian Reservation land. The largest population, consisting of approximately 5,000 plants, is within an active oil field, and the number of roads, oil wells, and pipelines is increasing. (Although the land and surface rights are owned by the Navajo Tribe, the leasable mineral rights are privately owned.) A second population of about 1,000 individuals was bisected by two electrical transmission lines more than 20 years ago, and the species has not repopulated the disturbed land directly underneath the lines. An upgrading of the transmission line is planned for 1985, but the Western Area Power Administration (WAPA) is considering the species in its planning. Damage to nearby plants from maintenance or recreational off-road vehicles using the right-of-way could intensify in

the future. The third and smallest population is found in an area that is expected to be explored for oil within the next year.

Because of these threats, the species' very localized distribution, and its poor tolerance of habitat disturbance, *Astragalus humillimus* has been proposed for listing as an Endangered species (F.R. 6/28/84). A formal designation of Critical Habitat was not included in the proposal because publishing detailed maps and population locations would make the species more vulnerable to vandalism; nonetheless, the plant and its habitat would receive protection under Section 7 of the Endangered Species Act. The Navajo Tribe, WAPA, and Bureau of Land Management, which are responsible for administering the habitat, are aware of the population sites.

Comments on the listing proposal are welcome, and are due the Regional Director, Region 2 (address on BULLETIN page 2) by August 13, 1984.

Effects of the Listings if Approved

If each proposal is made final, each plant will receive protection under the Endangered Species Act of 1973, as amended. Conservation measures provided to species listed as Endangered under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Under Section 7 of the Act, Federal agencies would be required to consult with the Fish and Wildlife Service to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of the listed species or adversely modify their habitats. Until a final decision on the listing proposal is reached, Federal agencies are required only to "confer" with the Service, a non-binding procedure.

Interstate and international trafficking in these plants without a permit will be prohibited, with certain exceptions, if they are listed. In addition, Section 9 of the Act makes it unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction.

Reclassification Proposed for Florida Alligator

The Fish and Wildlife Service has proposed to reclassify the American alligator (*Alligator mississippiensis*) in Florida, where the species is currently classified as Threatened, to the classification of "Threatened due to Similarity of Appearance" (F.R. 6/20/84). This proposed change is based on evidence that the Florida alligator is not biologically threatened, a legal status given to spe-

cies that are likely to become endangered within the foreseeable future.

The American alligator occurs in varying densities in wetland habitats throughout the Southeastern U.S., including all or parts of the States of Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, Oklahoma, North Carolina, South Carolina, and Texas. Crocodilians such as the American alligator are the only extant representatives of the order Archosauria, and this species represents one of the only two extant species of the genus *Alligator*. Having evolved some 180-200 million years ago, the crocodilians show many advanced characteristics such as a four-chambered heart, a rudimentary diaphragm, and elaborate maternal behavior.

The alligator was first classified as Endangered in 1967 throughout its range due to a concern over poorly regulated harvests. Subsequently, as a result of Federal and State protection, the alligator recovered rapidly in many parts of its range. The Service has reclassified it as Threatened in Florida and in certain coastal areas of South Carolina and Georgia, and as Threatened due to Similarity of Appearance in Louisiana and Texas.

In June 1982, the Service began additional status assessments of the alligator in Florida. Data resulting from these assessments indicate that the American alligator in Florida is not likely to become endangered within the foreseeable future, and thus its current designation as a Threatened species should be changed. However, because of the alligator's similarity of appearance to other endangered crocodilians and because hides or other parts of the animal may be subject to trade, the Service believes it is necessary to maintain some control over commercial activities involving alligators in the State of Florida. The classification of Threatened due to Similarity of Appearance, which is authorized under Section 4 of the Endangered Species Act, will aid effective law enforcement and could help ensure the conservation of less secure alligator populations, as well as other crocodilians, that are still Threatened or Endangered. (See map in BULLETIN Vol. VIII No. 11.)

Florida has more alligator habitat than any other State within the species' range. One habitat type, the palustrine emergent (which includes the Everglades and other freshwater marshes), has undergone a loss of approximately 25 percent in the last 30 years due to drainage and conversion for agricultural use. However, the total amount of fresh marsh habitat still exceeds 3 million acres and is likely to remain an abundant habitat type in the future. Florida's lake habitats, although smaller in total size than the fresh marshes, are highly productive for alligators, often having densities well in excess of those in marsh areas. Overall, habitat loss does not currently pose a threat to the status of the American alligator in Florida.

The commercial demand for alligator products was responsible for the overharvests that caused population declines during the 1950s and 1960s. A 1969 amendment to the Lacey Act reversed this problem by prohibiting interstate commerce in illegally taken reptiles and their parts and products. This act reinforced State laws protecting the alligator by providing Federal authority for dealing effectively with illegal activities in the market system. In addition, the Endangered Species Act of 1973 added heavy penalties which further enhanced the control of illegal taking, and State and Federal authorities have been generally successful in controlling such activity.

The State of Florida has adopted an alligator management plan and is conducting an extensive research program designed to ensure against overharvest of the species. Since uncontrolled harvesting was the reason for past overexploitation in some areas, and sustainable yields from harvested populations are biologically limited, Florida is committed to extremely restricted harvests. The only exception to this would be in very localized areas where potentially serious conflicts exist between humans and alligators. In these cases, intentional overharvests may occasionally be authorized to remove any threat to human safety and to promote public tolerance of this sometimes hazardous

continued on page 8



Productive alligator populations are well distributed throughout Florida, with over 6.7 million acres of wetland habitat currently occupied by the species.

Photo by C. Kenneth Dodd, Jr.

Regional Briefs

continued from page 2

plants were discovered through helicopter surveys. This brings the total to three sites in Oregon and four in Idaho.

* * *

As of May 30, over 11,300 cui-ui (*Chasmistes cujus*) had been captured in the Marble Bluff Fish Facility and released upstream. This was the second largest run to pass through the facility; the largest run occurred in 1982 when 14,000 fish were captured. This year's spawning run began on April 9 and gradually increased to a peak of 1,444 fish on May 4, after which the run slowly decreased to only a few stragglers by May 25.

The fish continued to ignore the Pyramid Lake Fishway in favor of the river entrance as a gateway to their spawning grounds. A recent increase in Pyramid Lake's elevation allowed cui-ui free and easy access over the former Truckee River delta. However, only a fraction of those fish reaching the stilling basin below Marble Bluff Dam could be captured for transport over the dam. For this reason, we believe that several thousand cui-ui spawned in the marginal habitat downstream of the dam.

* * *

Region 2—Regional office personnel assisted the New Mexico Department of Game and Fish and the U.S. Forest Service in a renovation of Dry Creek in the Gila Wilderness. This work was done to remove introduced brown and rainbow trout prior to the stocking of Endangered Gila trout (*Salmo gillae*), a native species, into this stream. In the past 3 years, recovery work for the Gila trout has involved stream improvement work on Iron Creek, building a barrier on Little Creek, and stream renovation and restocking with Gila trout. Now Dry Creek is being readied for a transplant from Spruce Creek. With the success of three transplanted populations, four of the five Gila trout populations will have been duplicated and the species can be considered for reclassification. Both the State of New Mexico and the Forest Service are to be congratulated for their excellent work toward the recovery of this Endangered species.

* * *

During periodic sampling of sediments along the Intracoastal Waterway adjacent to Aransas National Wildlife Refuge in Texas, the U.S. Army Corps of Engineers has turned up sediment samples containing up to 10,000 parts per million (1%) for oil and grease. Section 7 consultation on waterway dredging has been delayed until the impacts of hydro-

carbon exposure have been assessed in adjacent shallow bays where whooping cranes (*Grus americana*) are known to feed. Questions involving the spread of the materials into the food chain and their eventual impact on wintering whooping cranes at Aransas will have to be addressed.

* * *

This year was the most successful breeding season ever for Arizona's small desert population of bald eagles (*Haliaeetus leucocephalus*). Mr. Teryl Grubb of the U.S. Forest Service Rocky Mountain Forest and Range Experiment Station in Tempe, Arizona, reported that 15 pairs (including four that are newly discovered) laid eggs this year. Eggs failed to hatch at five sites, and nestlings succumbed to unknown causes at two additional sites. A total of 15 eaglets fledged from the eight remaining sites. Although all four new sites were found with eggs, only one of these—a most unusual nest in a ponderosa pine 8 miles from the nearest riverine habitat—yielded fledged young.

* * *

Peregrine falcon (*Falco peregrinus*) nesting success in the Big Bend area of west Texas was disappointing again this year. Only one eyrie fledged any young, which was comparable to last year's results. In a cooperative effort, the National Park Service and the Fish and Wildlife Service plan to retrieve eggshell fragments and prey remains from several of the eyries to determine if pesticide contamination might be a factor in the poor reproductive performance.

* * *

Region 4—The annual May visits to the known Alabama green pitcher plant (*Sarracenia oreophila*) colonies were held during the week of May 21 by the Jackson, Mississippi, Endangered Species Field Office in order to gather status information. Some very encouraging signs indicated that management actions initiated since last May are paying off. There was an obvious improvement in plant health and vigor, and increased flowering activity at many colony sites. The six colony sites burned during last winter's dormant season had the most noted response. Habitat conditions at all of the sites showed a marked improvement over last year, with noted reductions in competition from other plants.

* * *

The Jacksonville, Florida, Endangered Species Field Station personnel found that one of the few remaining sites for *Dicerandra immaculata* (Lakela's mint) had been destroyed by construc-

tion activities. A proposal to list this species as Endangered is expected to be published shortly in the *Federal Register*.

* * *

The Jacksonville Field Station is involved in a Section 7 consultation with the Federal Highway Administration (FHWA) concerning the completion of Interstate 75 from the Fort Myers area to Fort Lauderdale, Florida. Of primary concern in this issue is the Endangered Florida panther (*Felis concolor coryi*). Discussions are taking place with the National Park Service, the Florida Game and Fresh Water Fish Commission, and the FHWA to determine alternatives that might facilitate panther movement across the highway.

* * *

April was the height of the nesting season for the Endangered Mississippi sandhill crane (*Grus canadensis pulla*). Surveys found three nests, with two eggs in each nest. Nest 1 was in an area that has been used for 13 of the past 15 years. The two eggs were floated and showed no sign of embryonic activity. Nest 2 had a pipped egg in the process of hatching and a viable egg. A subsequent visit observed the first hatchling as a healthy chick which had left the nest. The second egg also hatched, but the chick appeared malformed and did not survive. Nest 3 was in an area cleared by the Young Adult Conservation Corps (YACC) several years ago. This was the third consecutive year for nesting in this area.

* * *

Region 5—Regional Director Howard Larsen, and Roger Hogan and Paul Nickerson of the regional endangered species staff presented six bald eagles from Nova Scotia, Canada, to Richard Cronin, Director of the Division of Fisheries and Wildlife in Massachusetts. The eagles were presented in a formal ceremony held at Hanscom Airfield in Bedford, Massachusetts, on June 14. On June 29, personnel from the Pennsylvania Game Commission, accompanied by Paul Nickerson, brought 12 bald eagles from Saskatchewan, Canada, for later release at two sites in Pennsylvania.

* * *

Region 6—On May 7, 1984, Region 6 personnel met with representatives from the Wyoming Game and Fish Department and University of Wyoming to discuss the Wyoming toad (*Bufo hemiophrys baxteri*). The toad, listed as Endangered on January 17, 1984, was once abundant in the Laramie Basin, Wyoming. Discussions centered on the

upcoming survey work, the current status of the toad, and future recovery activities.

Last year, only three toads were observed. Two immature toads that were collected during summer survey work died in captivity, and one adult was observed during the fall. Surveys conducted during May 1984 located seven male toads where the juveniles were found last year, a 7 to 8-square-mile area located on private land.

On June 13, representatives from the Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, National Park Service, and the States of Idaho and Wyoming met in Jackson, Wyoming, to discuss the present and future management needs of the Gray's Lake flock of whooping cranes. Discussion centered on habitat management and modifications that may be considered in Wyoming, Montana, and Idaho, the need to finalize the whooping crane data base, and on the need for further utilization of Section 6 funds for developing activities dealing with these cranes.

The Service received a report on June 27 from the Utah Division of Wildlife Resources (UDWR) that 25 June suckers (*Chasmistes liorus*) had been killed by unknown individuals at the holding facility at Utah Lake. The UDWR

had been planning to obtain eggs from these captive fish. Previously, approximately 200,000 eggs had been taken and hatched. The UDWR also has implanted radio transmitters on nine June suckers and released them into Utah Lake. This fish was proposed for listing as Endangered on July 2, 1984. (See story in next month's BULLETIN.)

Interagency Grizzly Bear Committee (IGBC) members and representatives from three conservation organizations toured the Northern Continental Divide, Cabinet/Yaak, Selkirk, and Yellowstone grizzly bear ecosystems during the week of June 4, 1984. The main purpose of the tour, which was conducted by the Forest Service, was to familiarize IGBC members with the specific grizzly bear ecosystems and the problems/issues involved with each area. During the tour, the group met with five separate panels made up of local residents to discuss grizzly recovery and management efforts. Members also met with biologists from State wildlife agencies to discuss present and potential problems with grizzly management.

Region 7—After being eliminated from Agattu Island by introduced Arctic foxes (*Alopex lagopus*), Aleutian Canada geese (*Branta canadensis leucopareia*) are once again nesting on this island where they historically numbered in the

thousands. The Service successfully removed Arctic foxes from Agattu in the late 1970s. In an effort to reestablish a breeding population of the goose, the Service for the past four years has been releasing at Agattu wild family groups of Aleutian geese caught on Buldir Island. Although spring surveys in 1982 and 1983 revealed that small numbers of Aleutian geese were returning to Agattu and nearby Alaid/Nizki Islands, no evidence of nesting could be found.

This summer, Aleutian Islands Unit—National Wildlife Refuge personnel found 3 nests and observed a brood, confirming that the recovery effort is indeed succeeding. Two pairs of geese were also seen on Alaid/Nizki, where captive raised birds were released in 1981. More encouraging news came in from the field crew at Chagulak Island in the eastern Aleutian Islands. Until 1982, when a single Aleutian goose nest was found on Chagulak, the only known breeding population for Aleutian geese was Buldir Island. This summer, eight Aleutian goose nests were found at Chagulak in a relative short time. Many more pairs are thought to be nesting there.

Meanwhile, efforts to eliminate Arctic foxes from other Aleutian Islands are continuing. Amukta Island is now considered fox free, and already small numbers of Aleutian geese—probably from nearby Chagulak Island—have been seen on the island. The future of the Aleutian Canada goose looks brighter than it has for the past several decades.

Two Desert Fishes

continued from page 1

chubs in only three of the four spring-heads and none of the outflows. Accordingly, this once plentiful subspecies has been proposed for listing as Threatened (F.R. 6/6/84). The proposal included a designation of Critical Habitat for the four headwater springs of Fish Creek, their outflows, and a surrounding 50-foot riparian conservation zone to maintain water quality.

Comments on the proposed rule are welcome from all interested agencies, organizations, and individuals, and are due to the Regional Director, Region 1 (see page 2 of the BULLETIN for address), by August 6, 1984.

Sonora Chub

Another desert fish, the Sonora chub, inhabits an area in southern Arizona and adjacent Sonora, Mexico. This fish is a stream pool dweller, but it is highly secretive and little is known about its behavior or habitat preferences.

In the U.S., this small member of the minnow family occurs only in Sycamore Creek and its headwater tributary, Yank's Spring, located within the Coro-

nado National Forest in Santa Cruz County. Sycamore Creek normally flows only about 3.7 miles through a narrow riparian canyon, forming a series of pools and small riffles over a bedrock and rubble substrate. It is intermittent during various times of the year, but the pools are maintained by underground flow. During periods of heavy rainfall, the creek reaches the International Border, a short distance further, at which time the chub presumably moves downstream into the State of Sonora. The species is known from only a very



Photo by J. E. Johnson

The Sonora chub, a small (generally less than 125 mm total length) member of the minnow family, is distinguished by two prominent lateral bands and a dark spot at the base of the tail.

few sites in Mexico within the Rio Magdalena drainage.

Its extremely limited distribution makes the Sonora chub vulnerable to danger from almost any habitat disturbances, particularly during intermittent stream flow. A 1983 status survey prepared by C. O. Minckley, under contract to the Fish and Wildlife Service, recommended protection of the fish due to this restricted distribution and threats to the fragile habitat posed by potential actions such as introductions of exotic fishes and their parasites, siltation from mining operations, water pollution, and streamflow depletion. One threat originates from uranium deposits that were discovered during 1981 on the upper eastern slopes of the Sycamore drainage. Although no active mining is currently planned for the area, the claims are being maintained, and future mining carried out without regard for the habitat could have severe adverse effects on the chub. Accordingly, a proposal to list the Sonora chub as Threatened was published in the July 6, 1984, *Federal Register*. Included in the proposed rule is a designation of Critical Habitat for Yank's

continued on page 8

Two Desert Fishes

continued from page 7

Spring and a 5-mile stretch of Sycamore Creek, along with a surrounding 25-foot riparian conservation zone, all of which is within Coronado National Forest.

Comments on the proposal to list the Sonora chub are welcome, and are due to the Regional Director, Region 2 (address on page 2), by August 6.

Available Conservation Measures

If the listing proposals are made final, both fishes and their habitat will receive the protection authorized for Threatened species under the Endangered Species Act. Federal agencies are required to consult with the Fish and Wildlife Service to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of listed species or adversely modify their Critical Habitat. Until a final decision is made on the listing proposals, Federal agencies must only "confer" with the Service, a non-binding procedure. No significant effects on current Federal activities are expected.

Because the threats to the survival of these two fishes are from habitat degradation rather than intentional taking, both listing proposals contain a special rule to allow collection without a Federal permit *if* State collecting permits are obtained and all other State wildlife regulations are satisfied. Such taking would be limited to educational, scientific, propagation, and other conservation purposes consistent with the Act. Incidental take by anglers would not violate the Act if the fish are immediately returned to the water.

Aside from the activities exempted by the special rules, all other protective prohibitions contained in 50 CFR 17.31 would apply. Other benefits of the listings would be the development of recovery plans and possible Federal funding of State conservation programs.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	19	233	3	0	22	292	21
Birds	52	14	144	3	0	0	213	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	4
Fishes	30	3	11	12	1	0	57	30
Snails	3	0	1	5	0	0	9	6
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	5
Plants	60	3	0	9	2	2	76	26
TOTAL	205	45	459	48	9	37	803	154**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

**More than one species may be covered by some plans.

Number of Recovery Plans approved: 132

Number of species currently proposed for listing: 37 animals
34 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 40 fish & wildlife
13 plants

June 30, 1984

Florida Alligator

continued from page 5

species. This comprehensive commitment by the Florida Game and Fresh Water Fish Commission to research and management of the species should ensure healthy alligator populations in the State.

The reclassification proposal, if it becomes final, will be a formal recognition by the Fish and Wildlife Service of the biologically secure status of the American alligator in Florida. By listing it under the Similarity of Appearance provisions of the Endangered Species Act, and enforcing the special rules for

American alligators in 50 CFR 17.42, the Service believes that the conservation of listed populations of the American alligator and other crocodilians can be ensured. The Similarity of Appearance provisions have already proven effective in the State of Louisiana.

Comments on this proposal are invited and are due by September 18, 1984, to the Jackson Endangered Species Field Station, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 316, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213.

July 1984

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES

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PUBLIC DOCUMENTS

DEPOSITORY ITEM

Four Plants in Danger of Extinction

SEP 26 1984

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Four additional plants were proposed in July by the Fish and Wildlife Service for listing under the Endangered Species Act. If each of the proposals is approved, the conservation measures authorized under the Act will be available to protect the following species:

Blue Ridge Goldenrod

The Blue Ridge goldenrod (*Solidago spithamea*), endemic to high mountain peaks in North Carolina and Tennessee, has been reduced to only three populations. This plant's decline is the result of recreational development in the other mountain peaks where it once thrived. The survival of the Blue Ridge goldenrod is now in danger, due mostly to habitat disturbance by hikers, and the Service has proposed to implement protection for it as a Threatened species (F.R. 7/23/84).

Solidago spithamea, a perennial herb that belongs to the aster family, grows above 4600 feet in dry crevices of granite outcrops in the Blue Ridge Mountains. Of the three known populations, two are on private lands in Avery County, North Carolina, and the third grows in a National Forest on the border between Mitchell County, North Carolina, and Carter County, Tennessee. Two additional populations were known historically, but both sites have been developed and no Blue Ridge goldenrod have been found there during recent searches.

The greatest damage to *Solidago spithamea* in the past probably came from commercial development of the open mountain summits where it occurs. The construction of observation platforms, trails, parking lots, roads, suspension bridges, etc., have taken their toll on the species either through the actual construction process or through trampling by hikers and sightseers. An anticipated increase in recreational use at all three localities where the Blue Ridge goldenrod currently exists

continued on page 5



The Blue Ridge goldenrod's yellow flowers are borne in heads arranged in a corymbose (flattened cluster) inflorescence.

Photo by A. Robinson

Endangered Classification Proposed for Four Fishes in Southeast and Utah

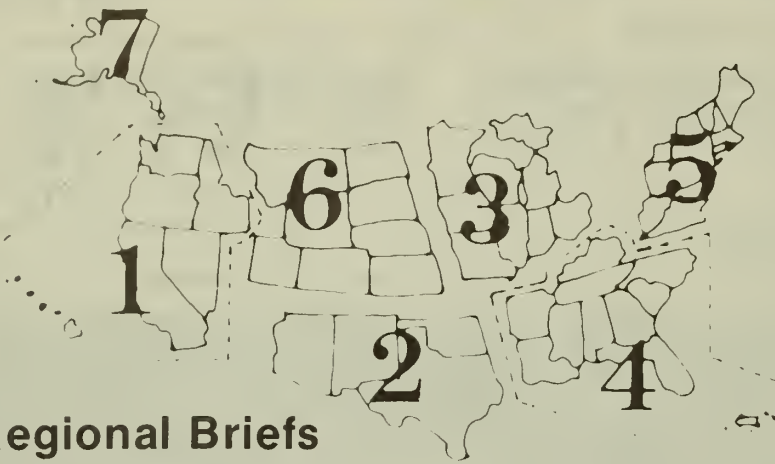
Three fish species from the southeastern United States and one from Utah were proposed during July for listing as Endangered. The amber darter (*Percina antesella*), trispot darter (*Etheostoma trisella*), and Conasauga logperch (*Percina* sp.), all known only from the upper Conasauga River basin in Georgia and Tennessee, face alteration of their habitat from pollution and water projects. A desert fish in north-central Utah, the June sucker (*Chasmistes liorus*), is also

threatened by habitat degradation, as well as by competition and predation from introduced fishes.

Conasauga Basin Fishes

Amber darters are slender fish generally less than 2½ inches in length. In color, they have a golden brown upper body, accented by dark saddle-like

continued on page 10



Regional Briefs

Endangered Species Program
Regional staffers have reported the following activities for the month of July:

Region 1—The Habitat Conservation Plan (HCP) being developed for the Coachella Valley fringe-toed lizard (*Uma inornata*) has reached the second draft stage. The HCP Steering Commit-

tee met on July 26 to review the plan, complete it, and send it out for review by the local government agencies. Funding levels for the developers and the boundaries of all three preserves have been agreed upon. Mr. Don Weaver, the local sand transport expert, appeared at the last meeting of the Steering Committee and presented data showing that all of

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U.S. Fish and Wildlife Service Regions

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the preserves as they are now designed have adequate sand sources. The Environmental Assessment for the FWS's land acquisition project in the Coachella Valley has been started.

Dr. Derral Herbst of the Honolulu, Hawai'i, Endangered Species Office completed an intensive survey of the plants of Truk, Ponape, Yap, and Kosrae in support of the Pacific Island Forest Birds Survey. Over 1,000 collections were made with triplicate specimens taken for each collection (3,000 specimens). Dr. Herbst is now in the process of preparing and identifying these specimens.

Millions of cui-ui (*Chasmistes cujus*) larvae emigrated this year from their river hatching grounds in the Truckee River to Pyramid Lake. Emigration began in early May, peaked during the first part of June, and terminated in the last week of June. There has always been a question, however, whether these larvae could survive the drop over Marble Bluff Dam. Experimental releases of hatchery-produced larvae above the dam this month indicated that most larvae can survive the plunge over the dam. In addition to this experiment, several attempts were made to find juvenile cui-ui in Pyramid Lake's littoral zone. Most of these attempts yielded numerous juvenile cui-ui that averaged 22-25 mm in length. This complemented earlier indications that an excellent spawn occurred this year.

A peregrine falcon (*Falco peregrinus*) pair found nesting on a building in Los Angeles represents the first time "hacked" peregrines are known to have nested in California.

The Sacramento Endangered Species Office staff provided the U.S. Coast Guard a report entitled "Study of the Effects of the Existing and Proposed Distress Channel Antenna at Point St. George on Aleutian Canada Goose," prepared under contract with the FWS. The study, funded by the Coast Guard under an interagency agreement, was conducted to determine the effects of the proposed 150-foot tower facility, since it would be located in goose flyways between Castle Rock and Lake Earl, near Crescent City, California. The report contained several recommendations to alleviate the collision hazard that would be posed to virtually the entire population of Aleutian Canada geese (*Branta canadensis leucopareia*) when they congregate at this major migratory staging area each fall and spring.

continued on page 8

Protection Becomes Final for Four Plants

Final rules listing four species of plants as Endangered were published during July by the Fish and Wildlife Service. One of the plants occurs in Costa Rica and the other three are from the United States. They now receive protection under the Endangered Species Act of 1973, as amended, and bring the total number of plants listed as Endangered or Threatened to 80 species.

Jatropha costaricensis (Costa Rican jatropha)

The only known population of *Jatropha costaricensis* consists of fewer than 50 individual plants on a steep, rocky limestone slope along the Pacific Coast of Costa Rica. Playas del Coco, a village and resort area, is within one quarter mile of the small site, and housing development could modify the already limited habitat. Dry season fires, often kindled by vandals, are frequent in the area, and a single blaze could destroy the entire known population of the species. Local woodgatherers also may be damaging *Jatropha costaricensis*. Trampling of small plants by cattle is another threat since several livestock trails run directly through the area. One individual of *Jatropha costaricensis* was known from a second site 20 miles to the north in Santa Rosa National Park, but it was lost to erosion of its habitat.

Jatropha costaricensis was proposed by the Service for listing as Endangered on July 8, 1983 (see feature in BULLETIN Vol. VIII No. 8). Five comments on the proposal were received; four supported the action, the other indicated no position. These responses, along with additional supporting data, are summarized in the July 27, 1984, *Federal Register* notice that made the listing rule final.

As an Endangered species, *Jatropha costaricensis* will receive the protection authorized under the Endangered Species Act for foreign plants. (The species is only the third plant listed under the Act that occurs completely outside U.S. territory, and the first such plant to be listed as Endangered.) The regulations for foreign plants differ from those protecting U.S. species in that the Service lacks the legal authority to prohibit taking or to enforce habitat conservation under Section 7 of the Act. However, under 50 CFR 17.61, it is illegal for anyone under U.S. jurisdiction to engage in interstate/international trafficking in this plant without a permit.

The Service will seek to use its international assistance programs to encourage the conservation of *Jatropha costaricensis*. If the plant is added to the Annex of the Convention on Nature Pro-



Photo by C. E. Nauman

The cylindrical stems of the Key tree cactus are spiny, sometimes branched, and grow up to about 25 feet high.

tection and Wildlife Preservation in the Western Hemisphere, as the U.S. has recommended, the Service could provide personnel, conservation training, and, possibly, limited financial support for Costa Rican programs.

Cereus robinii (Key tree-cactus)

The largest of Florida's native cacti, *Cereus robinii*, stands erect in clumps of cylindrical stems that can reach heights of up to 8 meters (about 25 feet). Its attractive flowers are 5 to 6 centimeters

continued on page 4

Updated List Available

A new comprehensive List of Endangered and Threatened Wildlife and Plants, updated through July 20, 1984, is now available. This 24-page document contains the names of all organisms currently protected by the United States under the Endangered Species Act of 1973, as amended. It also contains a section on those species that have been removed from the list since 1973. Copies of the list can be requested from the Publications Unit, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Protection

continued from page 3

long, varying from white to green or purplish in color, and the fruit is a dark red berry. Due to its striking ornamental value, and to its increasing rarity, *Cereus robinii* is subject to overcollection by hobbyists and to commercial exploitation by plant dealers. An even greater threat is habitat destruction. The Florida Keys, where most of the surviving cacti are found, are experiencing rapid residential and recreational development. This results not only in the loss of *Cereus robinii* populations, but also of the entire tropical hardwood hammock habitats where they once grew. Such habitats are a unique ecosystem type in the U.S. that is quickly disappearing, and their decline is directly responsible for the Endangered or Threatened status of a number of other species in the Florida Keys.

Historically, *Cereus robinii* was known from at least 11 sites in the Florida Keys and 2 in Cuba. Today, however, the plant has been reduced to five areas in the Keys, only two of which are on Federal or State lands. In Cuba, it has suffered a similar decline. Because of the increasing threats from habitat loss and collecting, the Service proposed in the July 29, 1983, *Federal Register* to list *Cereus robinii* as an Endangered species (BULLETIN Vol. VIII No. 8). Of the 10 letters received in response to the proposal, most were in favor of listing, including several from State conservation agencies, and none opposed the action. The final rule listing *Cereus robinii* as an Endangered species was published on July 19, 1984.

Because *Cereus robinii* is an attractive plant with high horticultural potential, a designation of Critical Habitat was not included in the rule. Publishing the required maps and detailed habitat description would make this distinctive cactus more vulnerable to collectors and vandals. (At least one population has already been vandalized.) Since three of the five remaining U.S. populations are on private lands, such problems are particularly hard to control. Even on public lands, prohibitions against taking are difficult to enforce. Nevertheless, without a formal designation of Critical Habitat, *Cereus robinii* and its habitat will receive protection under Section 7 of the Act. Except for Service management of Key Deer National Wildlife Refuge (NWR), no Federal effects on the cactus are foreseen.

The Endangered classification makes interstate and international trafficking in *Cereus robinii* illegal except under permit. Section 9(a)(2)(B) of the Act prohibits the removal and reduction to possession of Endangered plants from areas under Federal jurisdiction, and this provision now applies to the cacti on

Key Deer NWR. These measures complement the protection already given *Cereus robinii* under the State of Florida's own endangered species legislation, which offers some controls on taking, intrastate transport, and sale, but does not address habitat conservation. A recovery plan will now be developed for the species.

Dyssodia tephroleuca (ashy dogweed)

A southwestern Texas plant, *Dyssodia tephroleuca*, survives with other relict grassland species on a single acre of private land in Zapata County. This plant is an erect perennial herb with stems up to 30 centimeters in height. Its leaves are covered with soft, woolly, ashy-white hairs and emit a pungent odor when crushed.

Approximately 1,300 individuals of *Dyssodia tephroleuca* occur at the small population site, most of which are found on a brushy section of ranchland used for grazing and deer hunting. Cattle grazing and brush clearing have severely reduced the habitat of this plant, and undisturbed climax grassland habitat now exists in southwestern Texas only as scattered remnants. The only other historical population of *Dyssodia tephroleuca*, which occurred in another county, apparently has disappeared. About 300 plants of the remaining population are on a State highway right-of-way, where they are vulnerable to roadside maintenance activities such as blading and brush clearing.

Due to these threats and its extremely restricted range, the species was proposed for listing on July 22, 1983, in the *Federal Register* (BULLETIN No. VIII No. 8). Five comments were received in response to the proposal, none of which opposed the action. Among the agencies writing in support was the Texas Department of Parks and Wildlife, which pointed out that a Federal listing would lead to the plant being added to the State's own endangered species list. The final rule classifying *Dyssodia tephroleuca* as an Endangered species was published by the Service on July 19, 1984.

Critical Habitat was not designated in the listing rule because publishing the location would make the small population, which is easily accessible by highway, extremely vulnerable to vandals and collectors. Nevertheless, the habitat will be covered under Section 7 of the Endangered Species Act, which protects listed species and their habitats from the adverse effects of Federal activities. Other benefits of the listing include prohibitions in interstate or international trafficking and the development of a recovery plan. Such a plan should

address ways to develop roadside maintenance procedures that are compatible with the conservation of the species.

Eriogonum pelinophilum (clay-loving wild-buckwheat)

The largest known population of *Eriogonum pelinophilum*, a small subshrub, is restricted to an outcrop of alkaline clay soil in the sparsely vegetated, dry badlands of Delta County in west-central Colorado. The plants are found at two sites about 3/4 of a mile apart, and they total approximately 10,000 individuals over about 150 acres of privately owned property.

The land between the two sites has been fenced off and used for grazing domestic livestock, primarily horses, and this land use may have been what originally split the population into two groups. Habitat that appears comparable to that where the surviving *Eriogonum pelinophilum* now occur can be found within the fenced area, but all of the remaining plants are outside the fence. The livestock have consumed all native vegetation from within the enclosure, and it has been replaced by weedy species. If the fenced pasture is expanded in the direction of the remaining *Eriogonum pelinophilum*, they also could become lost. Additional field work conducted by the Colorado Natural Heritage Inventory during late July 1984 resulted in the discovery of a half-dozen other smaller occurrences in the Delta-Montrose region. Plants and their habitat at these other sites have been reduced and isolated due to land conversion for agriculture, and all of the small groups are considerably vulnerable to extinction.

The Service proposed in the June 22, 1983, *Federal Register* to list *Eriogonum pelinophilum* as Endangered and to designate its Critical Habitat (BULLETIN Vol. VIII No. 7). Comments supporting the listing proposal were received from the Governor of Colorado, the Colorado Department of Natural Resources (Natural Areas Program), the Colorado National Heritage Inventory, and the Montrose District Office of the Bureau of Land Management. There were no responses in opposition to the proposal. The only change in the July 13, 1983, final rule from the proposed version was that, on the basis of new information provided by Colorado authorities, the area designated as Critical Habitat was expanded from 100 to 175 acres. Under Section 7 of the Endangered Species Act, *Eriogonum pelinophilum* and its Critical Habitat will be protected from any adverse actions involving a Federal agency; however, no such actions are anticipated. The Endangered classification also prohibits

interstate and international trafficking in the plant, although this has not been a factor in the species' decline.

Habitat conservation is the key to the survival of *Eriogonum pelinophilum*, and it is hoped that the listing might enhance the possibility of acquiring the population sites for the plant's protection. The landowner of the largest occurrence has already offered acreage for sale in a local newspaper under the heading, "Own a Rare and Endangered Species." The Nature Conservancy is currently working with the landowner to conserve the remaining habitat. In addition, since Colorado has a cooperative agreement with the Service on endangered plant conservation, it is possible that Federal contributions could become available to State programs for preservation of the species. A recovery plan for the return of *Eriogonum pelinophilum* to a secure status also will be developed.

Four Plants in Danger

continued from page 1

could cause further significant impacts on the species if protection is not provided. Likewise, additional development, such as expansion of trails or sidewalks, could further threaten the species if its needs are not considered during the planning process. To quote one botanist, *Solidago spithamea* "...seems to have an instinct for growing in the most scenic sites, thus coming underfoot and underseat."

During 1979, North Carolina passed legislation to protect its rare plants. The Blue Ridge goldenrod is protected under that State law as an endangered species, but the law offers protection only from intrastate trade and includes provisions for management. Tennessee does not have any State legislation to protect its endangered plants. A listing under the Federal Endangered Species Act could offer the additional protection needed to recover this species to a secure status once again. Because of potential threats from vandals or curiosity seekers, a designation of Critical Habitat for the easily accessible populations was not included in the listing proposal; however, all habitat protection measures authorized under the Endangered Species Act will apply.

Comments concerning this proposal are invited and should be sent by September 21, 1984, to the Field Supervisor, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

Lakela's Mint

A small plant in the mint family, Lakela's mint (*Dicerandra immaculata*) is a low-growing, dome-shaped shrub endemic to a very small area of ancient dunes near the Atlantic Coast in St. Lucie and Indian River Counties, Florida, between the cities of Vero Beach and Fort Pierce. The plants reach 15 inches in height and bear erect lavender-rose to purplish flowers in small cymes at the tips of the stems. Only 10 colonies of *Dicerandra immaculata* are currently known to exist and these plants are now in danger of extinction from sand mining, commercial and residential development, and a fungal disease which affects the seeds. To give this species the protection it needs to survive, the Service has proposed to list Lakela's mint as an Endangered species (F.R. 7/23/84).

The 10 existing colonies of *Dicerandra immaculata* are considered to represent a single population. All of the colonies occur on private land that is subject to residential and commercial development. Most of one colony was recently destroyed by commercial development; another has been partially destroyed by clearing and construction of houses. These development activities have occurred over the last 2 years and are expected to continue in the near future, affecting most or all of the remaining colonies of the species. Two colonies also are threatened by sand mining activities, and another major threat to the species is its vulnerability to mildew. This fungus destroys the viability of its seeds before they are dispersed.

There are currently no Federal, State, or local laws or regulations to protect Lakela's mint and its habitat. Because the few remaining colonies of this species are continuing to decline, the Service believes that immediate action to list *Dicerandra immaculata* as Endangered is necessary to ensure its survival. Although a formal designation of Critical Habitat is not a part of this proposal, due to potential threats from vandalism, adequate protection will be given to the species and its habitat if the proposal is made final.

Comments on this proposed rule are welcome and should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207, by September 21, 1984.

Vahl's Boxwood

Vahl's boxwood (*Buxus vahliae*) is found only in the semi-evergreen seasonal forests that occur in northern and northwestern Puerto Rico. Approximately 40 individuals of the species are

known to exist. The survival of *Buxus vahliae* is being threatened, because of its very limited numbers, by potential habitat modification or destruction due to limestone mining and urbanization, and by possible construction of a power plant. To aid in the survival of this species, the Service has proposed to determine it as Endangered (F.R. 7/13/84).

Buxus vahliae is an evergreen shrub that can grow up to 15 feet tall and has 3-inch thick stems and dark, shiny, green, oblong leaves that measure about 1.5 inches long and 3/4 of an inch wide. Flowering occurs in December through early April. The species has a very narrow ecological niche, and is restricted to ravines and ledges in semi-evergreen forests.

Vahl's boxwood occurs at two sites, one in Hato Tejas (Bayamón) and the other about 70 miles away in Punta Higüero (Rincón). The Rincón site, owned by the Commonwealth of Puerto Rico, has been proposed as a locale for the construction of a coal-fueled power plant to be constructed by the Puerto Rico Electrical Power Authority and the Federal Rural Electrification Administration. To make space for the power plant, part of the property might be converted, which could either destroy the 12-20 plants existing there or degrade the habitat. Air pollution from the power plant could also affect the species. If the listing proposal becomes final, the only Federal involvement that could be affected is that of the Rural Electrification Administration.

The Hato Tejas population of approximately 24 individuals is located in a haystack hill group that is surrounded by a large shopping center and other commercial and industrial lots. If this area is further developed, complete destruction of the boxwood's habitat would result. This *Buxus vahliae* population is located on the edge of an old limestone quarry and past mining activities in the area have resulted in the destruction of more than half of the boxwood population since the 1950's. Although the quarry is inactive at this time, the remaining plants could be destroyed if such activities are resumed.

Several species of boxwoods are grown in cultivation around the world—there is even a society devoted to the genus. Because of the species' ornamental value, another potential threat to its existence is collecting. Boxwoods are beautiful shrubs and taking could easily become a problem because both populations are accessible by road and trail. The extreme vulnerability of *Buxus vahliae* to any collecting would be detrimental to its survival. For this reason, the Service has not proposed a formal designation of Critical Habitat, which would require publication of maps and a detailed habitat description.

The Commonwealth of Puerto Rico does not have specific legislation or

rules to protect its endangered or threatened plants, although a list of vulnerable species does exist. With so few individuals known to exist, the protection provided by the Endangered Species Act would encourage the conservation of this diminishing species and its habitat.

Comments concerning this proposal are invited, and should be sent to the Ecological Services Field Supervisor, U.S. Fish and Wildlife Service, P.O. Box 3005—Marina Station, Mayagüez, Puerto Rico 00709-3005, by September 11, 1984.

Maguire Daisy

Also proposed for listing as Endangered (F.R. 7/27/84) is the Maguire daisy (*Erigeron maguirei* var. *maguirei*), a small perennial that grows up to 5 inches tall and blooms in mid-June. It is one of the rarest plant taxa in Utah.

The daisy was first discovered in 1940 by Dr. Bassett Maguire. It appears to have become extirpated at its two historical sites in Calf and Pine Canyons. At its only current site, on land administered by the Bureau of Land Management (BLM) in Emery County, Utah, only seven plants are known to exist. In this area, as in much of this part of Utah, there are mineral claims for uranium, and oil and gas leases. Even minor habitat disturbance associated with exploration or assessment of these claims and leases could result in the species' extinction.

Another threat to the Maguire daisy is grazing, which seems to have extirpated the plants in the canyon bottoms where the species was originally found. Further studies are needed to determine the actual impact of cattle grazing and its compatibility with the daisy's survival, but, presumably, this small herbaceous plant is palatable to cattle. Two of the existing seven plants were found to show some grazing damage thought to be caused by deer.

There are currently no Federal or State laws to protect the Maguire daisy. Because of its extremely low numbers, this species' vulnerability is greatly magnified by any inadvertent human impacts. If the proposal to list the daisy as an Endangered species becomes final, awareness of its vulnerability will increase, and provisions could be made for its proper management and eventual recovery.

The Service finds that designating Critical Habitat for the Maguire daisy is not prudent because there are no benefits that would outweigh the potential threat of vandalism which could be prompted by publication of a Critical Habitat map. The BLM has been informed of this proposed action, has acknowledged the threats to the daisy,

The Maguire daisy is characterized by leafy, hairy stems and up to five flower heads with white-to-pinkish ray flowers around a yellow center.

and is considering the taxon in its planning and management.

Comments concerning this proposal are due by September 25, 1984, to the Region 1 Director (address on page 2).

Effects of the Listings if Approved

If the proposals are made final, all four plants will receive protection under the

Endangered Species Act of 1973, as amended. Conservation measures provided to species listed as Endangered under the Act include recognition of its vulnerable status, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Under Section 7 of the Act, Federal agencies would be required to consult with the Fish and Wildlife Service to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of the listed species or adversely modify their habitats. Until a



final decision on the listing proposal is reached, Federal agencies are required only to "confer" with the Service, a non-binding procedure.

Interstate and international trafficking in these plants without a permit will be prohibited, with certain exceptions, if they are listed. In addition, Section 9 of

the Act makes it unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction.

CITES News

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S. Management Authority for CITES, ensuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Wider Ginseng Export Approvals Proposed

The Service has published proposed findings by the U.S. CITES Scientific (SA) and Management (MA) Authorities that would, if made final, allow the export of American ginseng (*Panax quinquefolius*) from several States that have not yet received export approval for the 1984 season (F.R. 7/23/84).

Ginseng was originally placed on CITES Appendix II by a vote of Party Nations as a conservation measure in order to provide a means of properly controlling exports of this commercially valuable plant. Export of any Appendix II species is legal only if the SA advises the MA that such export will not jeopardize the species' survival, and if the MA is satisfied that the listed plants or animals

being exported were not obtained in violation of laws for their protection. The criteria used in making these determinations for ginseng export, along with the lists of States with current export approval, are in the July 23, 1984, *Federal Register* notice.

If the proposed findings are made

final, cultivated and wild ginseng collected in Indiana and Wisconsin during the 1982-1984 seasons will be approved for export. In addition, export of wild ginseng collected in Vermont during the 1984 season will be approved. (Vermont already has approval for 1982-1984 cultivated ginseng.)



ginseng

Drawing courtesy of U.S. Department of Agriculture

Regional Briefs

continued from page 2

Region 2—Two thousand eggs of the Endangered Kemp's ridley sea turtle (*Lepidochelys kempii*) were donated by the Mexican Secretary of Fisheries to the U.S. Fish and Wildlife Service for establishment of a nesting colony at Padre Island National Seashore, Padre Island, Texas. The eggs were transferred by personnel of the Gladys Porter Zoo in Brownsville, Texas, to personnel of the National Park Service. Hatchlings on the beach at Padre Island National Seashore will be marked with "living" and "imprinted" tags. Following imprinting, the hatchlings will be transferred to the National Marine Fisheries Service's Galveston, Texas, laboratory where they will be "headstarted" for 1 year and then released into the Gulf of Mexico at Padre Island.

The Phoenix District of the Bureau of Land Management (BLM), in cooperation with the Fish and Wildlife Service and the Arizona Game and Fish Department (AGFD), stocked two sites in Arizona with Endangered Gila topminnows (*Poeciliopsis occidentalis*). The sites, Peoples Canyon and Tres Alamos, were stocked with approximately 1,800 fish taken from a population which has been established in Tule Creek. The two sites were selected by BLM biologist Bill Kepner because they met the Gila topminnow introduction site criteria developed by AGFD biologist Jim Brooks. Two television stations and a reporter with the Phoenix Gazette took part in the introductions, including transporting the fish to the sites with a TV station helicopter. If the introductions are successful, they will greatly assist in recovery of the species.

Region 4—The Jackson, Mississippi, Endangered Species Field Office is conducting status reviews on the Cahaba shiner (*Notropis simus*) and goldline darter (*Percina aurolineata*), both Category 2 candidate species, to determine if they should be proposed for listing. Copies of status reports and other pertinent information, along with the results of staff analysis of this information, will be sent to selected ichthyologists for their review and comment.

Field work was conducted in June on *Sarracenia rubra* ssp. *alabamensis* (Alabama cane-brake pitcher plant), a Category 2 candidate species, by the Jackson Field Station. Four of the seven known extant populations were visited and all showed a significant decrease in numbers and vigor. This decline is prim-

arily due to the loss of habitat through succession, which results from the suppression of fire and the lack of management. Overcollecting for commercial purposes also contributes to the species' decline. Despite the obvious threats to the Alabama cane-brake pitcher plant, a further assessment of its range is necessary before listing can be proposed. Potential habitat is presently being surveyed in search of new populations.

Charles Cook of Discovery Island Zoological Park at Walt Disney World in Lake Buena Vista, Florida, recently notified the Service that "Abraham," one of the four remaining dusky seaside sparrows (*Ammodramus maritima nigrescens*), died on June 24, 1984. A necropsy was performed that same day and it was determined that kidney failure, probably brought on by advanced age, was the cause of death. The male dusky was banded on private property near the St. Johns National Wildlife Refuge, Florida, on July 29, 1980.

As a result of the dusky's death, only three "pure" duskies survive. All are in captivity at Discovery Island. They have each paired with intergrade females of dusky/Scott's (*A. m. peninsulæ*) lineage, and are engaged in varying stages of breeding activity. One of the pairs (with a 50-percent dusky female) hatched out two chicks on June 30,

1984. Another pair (with a 75-percent dusky female) is currently incubating a two-egg clutch, and the third pair (with a 25-percent dusky female) has constructed a nest, but has as yet laid no eggs.

Region 5—On July 8, Roger Hogan, endangered species biologist, traveled to an area 200 miles north of Winnipeg, Manitoba, Canada, to collect bald eagles (*Haliaeetus leucocephalus*) for translocation to the State of New Jersey. Accompanied by climbers Craig Koppie and Keith Cline, and Provincial biologist Bill Koonz, Roger collected 10 young bald eagles at remote sites in the Lake Winnipegosis area and they were subsequently flown to holding facilities using a float-equipped aircraft. Upon return to Winnipeg on July 11, a press conference was held on the grounds of the Provincial legislature. Hogan and Koppie briefed news media and the Manitoba Minister of Natural Resources, Al MacKling, on the Canadian-U.S. project. The eagles reached their New Jersey hack site on July 12, following a final interaction with the news media in Philadelphia during which Hogan briefed Canadian Consul Irene Johnson on the cooperative project.

Five eagles collected in Nova Scotia in June 1984 and held in hack towers at Quabbin Reservoir, Massachusetts, fledged on July 26. In total, 28 bald



Alabama cane-brake pitcher plant

Photo by Randy Troup

eagles were collected this year from Nova Scotia, Saskatchewan, and Manitoba, and were provided to the States of Massachusetts, Pennsylvania, and New Jersey.

The second year of a survey of Virginia big-eared bat (*Plecotus townsendii virginianus*) maternity colonies was conducted in West Virginia during June by Judy Jacobs of the Endangered Species Field Office in Annapolis, Maryland, and Ken Knight of the West Virginia Department of Natural Resources. Eight caves were surveyed using night-vision scopes and infra-red lighting. Data analysis from the surveys indicates a 9-percent increase in populations over last year.

The Defenders of Wildlife, with an increasing interest in plant conservation, has established a reward fund to assist the Service in investigating the recent vandalism of the Virginia round-leaf birch (*Betula uber*). The Defenders are offering a \$500 reward for information leading to the arrest and conviction of those responsible for vandalizing the single remaining wild population of this Endangered tree. The vandalism was discovered in May 1984 when all but 5 of 30 healthy, two-year old seedlings were found to have been dug up and removed or cut off at the ground. The Service and the Virginia Department of Agriculture and Consumer Services are presently investigating the incident. Anyone with information that might be helpful is asked to contact the Service's law enforcement office in Richmond, Virginia, at 804-771-2481.

Region 6—Recovery efforts continue for the peregrine falcon in the Rocky Mountains. As of July, all eggs produced at the Rocky Mountain facility of the Peregrine Fund, Inc., have hatched. Of the 134 young hatched, 131 birds survived. To date, young have been released into 8 eyries and 21 hack sites in Colorado, Idaho, Montana, Utah, and Wyoming.

Region 7—This summer's peregrine falcon surveys along the Upper Yukon River located 27 occupied sites. A total of 46 young was observed, of which 40 were banded. Also, 15 adult birds were trapped. Ten of them had been previously banded, seven as adults at nest sites and three as nestlings, and all were banded along the Upper Yukon between 1979-1983. The remaining five adults were banded for the first time.

Peregrine surveys along the Middle and Lower Yukon, Colville, Tanana, and Porcupine Rivers also were completed this month. The survey results will be ready for publication soon.



Teresa Nelson, New England Field Representative for Defenders of Wildlife, presents a \$500 check to the Service's Region 5 Deputy Director, William Ashe, for establishment of a reward fund.

Snail Darter Reclassified

The snail darter (*Percina tanasi*), a small species of the perch family that occurs in parts of the Tennessee River system, has been reclassified under the Endangered Species Act from Endangered to Threatened (F.R. 7/5/84). Scientists who have been studying this fish and its habitat believe that the Threatened category more accurately reflects the species' current biological status.

In 1975, the snail darter was known only from a 16.5 mile stretch of the Little Tennessee River in Loudon County, Tennessee. When the gravel shoal areas needed by the species to spawn were threatened with inundation by the Tellico Dam and Reservoir Project, the snail darter was listed as an Endangered species (F.R. 9/9/75) and its known range was designated as Critical Habitat (F.R. 4/1/76). However, in 1979, Congress passed a law exempting the dam and reservoir project from the provisions of the Endangered Species Act. As a result, the project was completed and the snail darter no longer exists in the Little Tennessee River as a reproducing population. Before the fish were lost, some

were placed into the Hiwassee River in Polk County, Tennessee, where they appear to have established a self-sustaining population.

In recent years, more intensive surveys have located snail darters in short segments of six Tennessee River tributaries and the main channel of the Tennessee near the mouths of two of the tributaries. Based on this new information, the Snail Darter Recovery Team recommended that the species be reclassified from Endangered to Threatened. Neither the recovery team nor the Service felt there was enough evidence to remove the snail darter completely from Endangered Species Act protection at this time. Most of the populations are extremely small, restricted in range, and vulnerable to water pollution and habitat alteration.

On July 21, 1983, the Service published an advance notice of its plans to propose a reclassification. After further consideration, the actual reclassification proposal was published (F.R. 2/21/84), and it included a removal of the Critical Habitat designation for the original site on the Little Tennessee River

Snail Darter

continued from page 9

since flooding behind the dam had destroyed its value to the species. New designations of Critical Habitat were not proposed for the more recently discovered populations since it was feared that pinpointing their locations might lead to vandalism of this controversial species. Comments received in response to the advance notice and the reclassification proposal are summarized in the July 5, 1984, final rule.

Since there are no special rules associated with the snail darter reclassification, the species generally will continue to receive the same Endangered Species Act protection against taking under the Threatened classification that it received while listed as Endangered. There is, however, a slightly broader range of permits available for activities involving Threatened species, as outlined in 50 CFR 17.32. Moreover, even without designated Critical Habitat, the species and its habitat will receive protection under Section 7 of the Act from the adverse effects of actions involving Federal agencies.

Four Fishes

continued from page 1

markings, and a yellowish belly; breeding males also have a blue throat. The species appears to be restricted to shallow streams in gentle riffle areas over sand and gravel substrate, since none have been found in stretches with slack current and a silty bottom. Amber darters currently are known from only a 33.5-mile section of the Conasauga River crossing the Tennessee/Georgia border. One amber darter was collected in 1980 from a site on the Etowah River in Georgia, but subsequent surveys in that area were unsuccessful in relocating the species. A population that once existed in Shoal Creek, a tributary of the Etowah, is believed to have become extirpated in the 1950s when Allatoona Reservoir inundated its riffle habitat.

Trispot darters are slightly shorter and darker brown in color than amber darters, although they have three similar saddle markings on their backs. Breeding males are set apart by distinctive green and orange coloration along their sides. Unlike amber darters, trispots prefer slack water along stream margins over detritus, sand, and silt substrates. In late winter/early spring, they ascend small streams to spawn in shallow, marshy areas in fields and woods. Cur-

rently, the trispot darter is known from only two populations. The largest occurs in 38 miles of the Conasauga River, about the same stretch as that inhabited by the amber darter, although usually in a different section of the channel. The second is found in about 8.5 miles of Coahulla Creek, a Conasauga tributary in Georgia, and a small population may still exist in Sugar Creek. Two apparent population sites in Alabama, where the species was collected in 1947 and 1958, have been flooded by reservoirs.

The **Conasauga logperch**, formerly referred to as the reticulate logperch, is an undescribed species of the genus *Percina*. (A scientific description of the fish is being prepared by Dr. Bruce Thompson). The fish reaches lengths of 6 inches, and is characterized by the numerous tiger-like, vertical, dark stripes on its yellow background. Conasauga logperch spawn in the spring in fast riffle areas over gravel substrate, and have been observed hunting aquatic invertebrates by flipping over stones with their pig-like snouts. The species apparently is restricted to about 11 miles of the upper Conasauga River in Tennessee and Georgia, a stretch partly overlapping the upper ranges of the two darters discussed above.

All three of these species require clean, free-flowing streams, a limited habitat type that is in considerable jeopardy within the Conasauga Basin. Siltation, which often results when lands are cleared for agriculture and other uses, is a major threat to the water quality. Agricultural and urban runoff from developed parts of the watershed could further pollute the habitat, and a toxic chemical spill could lead to the extinction of any of these fishes. Still another serious threat could come from a U.S. Army Corps of Engineers water supply

and flood control project being planned for the Conasauga River near Dalton, Georgia. Depending on its location and design, such a project could have a severe impact on the three fishes if their biological needs are not considered during the planning process.

Fish and Wildlife Service interest in the Conasauga fishes has been growing since 1975 when the Service published a Notice of Review on the trispot darter. In the November 4, 1983, *Federal Register*, the Service announced that a status review was being conducted specifically for the amber darter, trispot darter, and Conasauga logperch to determine if they required protection under the Endangered Species Act. The responses gathered during the preliminary review are summarized in the July 13, 1984, *Federal Register* notice that proposes these fishes for listing as Endangered species. Included in the notice is a proposed designation of Critical Habitat for most of the fishes' known range. Only the two known spawning sites of the trispot darter were deleted because of their localized and fragile nature; trispots could be particularly vulnerable to vandalism and illegal collecting while spawning. The landowners involved have been made aware of the uniqueness of this habitat, and they do not anticipate any changes in land use at the sites. Further, even though they were not proposed as Critical Habitat, both spawning sites will receive the protection authorized under Section 7 of the Act.

Comments on the listing proposal are welcome from all interested agencies, organizations, and individuals, and are due to the Field Supervisor, Endangered Species Field Station, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 by September 11, 1984.



Amber darter, one of three Conasauga River Basin fishes proposed for listing as Endangered

Photo by John Harris



Although it once was extremely abundant and commercially important in the local fishery, the June sucker has become one of Utah's rarest fishes.

June Sucker

This large Utah fish also has been proposed for listing as Endangered (F.R. 7/2/84). It gets its common name from the month in which its peak spawning occurs. The June sucker is endemic to Utah Lake, in the north-central part of the State, and lower portions of its two largest tributaries, the Provo and Spanish Fork Rivers, where the fish spawns. Utah Lake is shallow (average depth only 2.9 meters), turbid, highly eutrophic, and, though slightly saline, is considered the largest freshwater lake located entirely within the State. Another native fish, the Utah sucker (*Catostomus ardens*), shares the lake with the June sucker, and apparently is not in danger of extinction at this time.

Historically, the June sucker was very abundant in Utah Lake. David S. Jordan, who is generally regarded as the father of North American ichthyology, first collected the fish in 1878. After revisiting the area in 1889, he reported huge numbers of suckers in the lake and enthusiastically proclaimed it as "the greatest sucker pond in the universe." Utah Lake suckers made up an important part of early commercial fish harvests, and were netted by the hundreds of metric tons annually before their numbers became low. As recently as the early 1950s, up to 1,350 suckers could

still be taken in a single day of commercial seining. Today, however, few if any suckers are captured in commercial nets at Utah Lake.

Commercial overfishing was one of the original causes for the decline of the June sucker, although few are now taken in this way because there are so few remaining. There have been other contributing factors. Water diversion for irrigation, municipal, and industrial uses is a continuing threat to both the lake and the spawning streams. An example of what can happen came during the 1932-1935 drought, when withdrawals for irrigation almost drained Utah Lake dry. Hundreds of tons of suckers were lost due to freezing and overcrowding in the little remaining water, and in 1935 there were no suckers running up Provo River to spawn. Today, when June suckers do spawn, they are highly vulnerable to illegal killing. Concentrated in clear, shallow streams, their backs often out of the water during low-water years as they make their way upstream, June suckers are easy prey for guns, arrows, rocks, and nets.

Like many other native fishes, the June sucker has not escaped the problems of predation and competition from exotic species. Its steep decline in recent decades appears to correspond closely with the introduction of white bass (*Morone chrysops*) and walleye (*Stizostedion vitreum vitreum*) in the

mid-1950s. Over 20 exotic fish species have been introduced into Utah Lake during the past 100 years, and the dominant fishes today are white bass, walleye, channel catfish (*Ictalurus punctatus*), and carp (*Cyprinus carpio*)—all exotic species.

Although it is difficult to give accurate figures for the current June sucker population, spawning run estimates lead to suspicions that there are fewer than 1,000 adults remaining, most if not all apparently over 15 years in age. No young-of-the-year or juvenile suckers are known to have been collected from Utah Lake in recent years, and it is possible that little or no recruitment to the June sucker population is occurring.

Fish and Wildlife Service concern about the status of the June sucker was first expressed in the December 30, 1982, notice of review on vertebrate species for possible listing under the Endangered Species Act (F.R. 12/30/82). The Desert Fishes Council subsequently petitioned the Service to list the June sucker as an Endangered species and to designate its Critical Habitat.

The areas proposed as Critical Habitat include the lowest sections of two major tributaries of Utah Lake: 7.4 kilometers of the Provo River and 3 kilometers of the Spanish Fork River. Although the June sucker is found in Utah Lake, the rivers are vital to spawning and, being a more vulnerable habitat type, need special management consideration. If later found necessary for the conservation of the species, Utah Lake and other areas in the two spawning rivers could be proposed as additional Critical Habitat.

Comments on the proposal to list the June sucker were due to the Regional Director, Region 6, by August 31, 1984.

* * *

Available Conservation Measures

If the listing proposals are made final, the three Conasauga Basin fishes and the June sucker will receive protection under the Endangered Species Act. The Endangered classification would give greater recognition of their precarious status, authorize possible Federal aid to State conservation efforts, and mandate the development of recovery plans for the four fishes. Under Section 7 of the Act, Federal agencies would be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the fishes or adversely modify their habitats. Among other benefits of listing are prohibitions, set forth in 50 CFR 17.21, making it illegal to take, possess, transport, and engage in interstate/international trafficking in Endangered species without the proper permits.

New Publications

The 1982 annual report on United States implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), published in September 1983, is now available. This report summarizes such information as the numbers and types of CITES permits granted, the states with which trade occurred, and the names of the species involved. Copies of annual reports from 1977-1981 also are available. Orders should be addressed to the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, U.S.A., or telephone (703)487-4650 - Sales Desk. Please include the following information with orders:

- 1977 Report No. PB 84 146133
\$11.50 - printed (A05)
\$ 4.50 - microfiche (A01)
- 1978 Report No. PB 84 146141
\$14.50 - printed (A07)
\$ 4.50 - microfiche (A01)
- 1979 Report No. PB 82 128646
\$19.00 - printed (A10)
\$ 4.50 - microfiche (A01)
- 1980 Report No. PB 83 143198
\$22.00 - printed (A12)
\$ 4.50 - microfiche (A01)
- 1981 Report No. PB 83 188524
\$40.00 - printed (A24)
\$ 4.50 - microfiche (A01)
- 1982 Report No. PB 84 146158
\$23.50 - printed (A13)
\$ 4.50 - microfiche (A01)

Copies of *An Atlas and Illustrated Guide to the Threatened and Endangered Vascular Plants of the Mountains of North Carolina and Virginia*, General Technical Report SE-20, can be obtained free from the U.S. Department of Agriculture,

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	14	19	233	4	0	22	292	21
Birds	52	13	144	3	1	0	213	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	4
Fishes	29	3	11	13	1	0	57	30
Snails	3	0	1	5	0	0	9	6
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	5
Plants	62	4	1	9	2	2	80	27
TOTAL	205	45	460	50	10	37	807	155**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

**More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 133

Number of species currently proposed for listing: 41 animals
34 plants

Number of Species with Critical Habitats determined: 64

Number of Cooperative Agreements signed with States: 40 fish & wildlife
13 plants

July 31, 1984

ture, U.S. Forest Service, Southeastern Forest Experiment Station, Asheville, North Carolina 28801.

Some of Canada's vulnerable plant species are discussed in two 1983 publications that are now available: *The Rare Vascular Plants of Quebec*, Syllogeus No. 48, by André Bouchard, Denis Barabé, Madeleine Dumais, and Stuart Hay; and *The Rare Vascular Plants of New Brunswick*, Syllogeus No. 50, by Harold R. Hinds. Individual copies of both publications and a list of previous titles in the Rare Plant series are available, in either English or French, from the National Museum of Natural Sciences, Ottawa, Ontario, Canada K1A 0M8.

The Massachusetts Department of Environmental Quality Engineering has available part II of its *Selected Freshwater Invertebrates Proposed for Special Concern Status in Massachusetts*. Copies may be obtained by sending 50 cents in stamps to: Massachusetts Department of Environmental Quality Engineering, Division of Water Pollution Control, Westborough, Massachusetts 01581 (Attention: Arthur Screpetis).

An *Atlas and Illustrated Guide to the Threatened and Endangered Vascular Plants of the Mountains of North Carolina and Virginia* is available from the U.S. Forest Service. Copies may be obtained by writing to the Southwest Forest Experiment Station, 200 Weaver Boulevard, Asheville, North Carolina 28804.

August 1984

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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Technical Bulletin

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Nine Mariana Islands Species Listed as Endangered

Seven birds and two bats native to the Territory of Guam and the Commonwealth of the Northern Mariana Islands, both part of an island group in the western Pacific, have been listed by the Service as Endangered (F.R. 8/27/84). All nine animals have declined drastically in both numbers and distribution, and several appear to be on the verge of extinction. It is hoped that they now will benefit from the provisions of the Endangered Species Act.

The islands of Micronesia, including the Mariana group, support relatively few native vertebrate animals, and unique species or subspecies often are restricted to a single island. Because of their limited range and specialized ecological needs, island animals and plants generally prove to be highly vulnerable to extinction, especially as their range is invaded by people and associated habitat disturbances, domesticated animals, introduced predators, and diseases. All of these factors probably contributed to the decline of the following native animals:

- **Guam flycatcher** or **broadbill** (*Myiagra freycineti*). This small bird formerly occurred throughout all forested areas of Guam, but now is restricted to only about 373 acres at the northern end of the island. It is extremely rare and on the brink of extinction.
- **Mariana crow** (*Corvus kubaryi*). Similar in appearance and habits to the common crow (*C. brachyrhynchos*) of North America, this bird occurs in reduced numbers only on the islands of Guam and Rota.
- **Mariana gallinule** or **moorhen** (*Gallinula chloropus guami*). This dark, long-legged bird is a victim of habitat degradation by drainage of wetlands. Its numbers on Guam had declined to 100-200 birds by 1983, and there are small, very restricted populations on three other islands.
- **Micronesian kingfisher** (*Halcyon cinnamomina cinnamomina*). Despite its common name, this bird does not catch fish like other members of its family, but forages in the forest for small land animals. It is another of the Guam endemics that has suffered significantly from habitat destruction.

Although once considered common, the Micronesian kingfisher now is restricted to less than one-fourth of its original range, and its decline is continuing.

- **Guam rail** (*Rallus owstoni*). This flightless bird, which is also endemic to Guam and was once very numerous, has suffered a precipitous drop in range and numbers. Fewer than 50 are thought to remain, distributed in several small groups in extreme northern Guam. The species was temporarily listed as Endangered, on an emergency basis, in April 1984 when the habitat of one of the largest surviving groups was jeopardized by proposed land clearing activities at Andersen Air Force Base (see BULLETIN Vol. VIII No. 5). Protection for the Guam rail became permanent with the August 27, 1984, final listing rule.

There is some hope for this species in captivity. A pair of Guam rails at the National Zoological Park's facility at Front Royal, Virginia, have produced three young that, at last report, are doing well. Several adult rails that are being held in captivity by Guam wildlife officials also show promise for breeding success.

- **Vanikoro** or **gray swiftlet** (*Aerodramus vanikorensis bartschi*). This bird, a small, insectivorous, cave-nesting species in the swift family, has virtu-

ally disappeared from two islands within its former range and is thought to be declining on at least two of the other three.

- **bridled white-eye** (*Zosterops conspiciata conspiciata*). As late as 1981, it was estimated that about 2,000 individuals of this small, yellowish songbird remained in northern Guam. Since then, however, its numbers are thought to have plunged to fewer than 50 individuals. The sharp decline may still be in progress, making this subspecies one of the most critically endangered birds under U.S. jurisdiction.

continued on page 5



Guam flycatcher (*Myiagra freycineti*)

Photo by H. Douglas Pratt



Mariana crow (*Corvus kubaryi*)

Photo by H. Douglas Pratt



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of August:

Region 1—There were 64 active peregrine falcon (*Falco peregrinus*) nesting pairs in California in 1984. Forty-seven successfully fledged 91 young, 12 failed

to hatch their eggs, and 5 didn't lay, for an average of 1.4 young per active site. Twenty-six of the forty-seven successful sites had their eggs removed for captive incubation and return of the chicks to the nest. Forty-four of the 91 young that fledged to the wild were reared in captivity. Eggshell thinning caused by DDE (a

metabolite of DDT) continues to be a chronic problem with this peregrine population. An additional 24 captive-bred peregrines were released at 8 California hack sites and 4 were cross-fostered to two pairs of prairie falcon (*Falco mexicanus*) parents.

Four bald eagle (*Haliaeetus leucocephalus*) nestlings were taken from northern California for release on Santa Catalina Island, which is off the State's southern coast. These eagles have successfully fledged from release sites to join the 8 to 10 eagles remaining on the island from the 16 released therein previous years. There are two known pair bonds among the earlier released birds, but these birds are still too young to breed.

Chevron U.S.A. and the Sacramento Endangered Species Office are cooperating on a rehabilitation program for a 1.5-acre remnant of sand dune habitat located within Chevron's El Segundo Refinery. The dune remnant provides habitat for the Endangered El Segundo blue butterfly (*Euphilotes (=Shijimiaeoides) battoides allyni*). The majority of the butterfly's habitat is found on approximately 90 acres of dunes along the western border of Los Angeles International Airport. At the refinery site, the Service has provided seedlings of the butterfly's foodplant, and Chevron is planting the seedlings, monitoring their growth, and removing any competing plants. Initial results have been successful and have expanded feeding and egg-laying sites for the butterfly on this small "island" of habitat.

Of the 40 least Bell's vireo (*Vireo bellii pusillus*) nests checked along the San Luis Rey, Sweetwater, and San Diego Rivers in 1984, over 95 percent had been parasitized by brown-headed cowbirds (*Molothrus ater*). Parasitized nests seldom produce any vireo young. It appears that a systematic cowbird trapping program will be necessary to preserve many remaining subpopulations and to recover the vireo from its precarious status. A listing package is currently under review for this Category 1 candidate bird.

The Coachella Valley fringe-toed lizard (*Uma inornata*) Habitat Conservation Plan (HCP) is nearing the final draft stage. The Steering Committee drafted and released a summary of the HCP on July 27, 1984. The summary is available to all interested parties through the regional office. To date, one preserve

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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has been established and the Bureau of Land Management (BLM) is recommending the establishment of a second preserve on land it administers. Actions to establish the third and largest preserve are also progressing. The BLM and The Nature Conservancy are effecting a land swap, Congress is acting on a request to appropriate funds for a land purchase, and local government agencies are collecting fees to acquire part of the preserve. A projected date for completion of the effort is August 1985.

The plans for creating additional stream habitat on the Moapa National Wildlife Refuge were recently completed. The rehabilitation plans would add 460 feet of stream to the 600 feet of suitable Moapa dace (*Moapa coriacea*) habitat already on the refuge. Bid solicitation for the proposed work will be released soon, and channel construction should begin shortly thereafter.

The Service's Great Basin Office in Nevada is conducting a survey of the Muddy River system to determine the distribution and relative abundance of the Moapa dace. With the survey approximately 35 percent complete, dace have been found in three spring systems off refuge property, accounting for an estimated 500 adults.

A Regional Brief item in BULLETIN Vol. IX No. 6 to the effect that o'opu alamo'o (*Lentipes concolor*), a native fish that is a Category 2 candidate for future listing, have been discovered spawning in Ho'okele'kele Stream on the Island of Hawai'i was in error. In the Draft Coordination Act Report for the Wailuku-Honoluli Hydro-power Study, authored by John Ford and Andy Yuen of the Service's Honolulu office, it states that no evidence of spawning, recruitment, or egg masses were found in the affected reach. Yuen did find what appeared to be a single gravid female; however, the fish was not caught and its reproductive status could not conclusively be established. Ford and Yuen suspect that they found egg masses of *Lentipes concolor* in upper Hanawi Stream on Maui during an in-stream flow study in April 1984, but the spawning of this species remains an elusive event to document.

Region 2—Two public meetings were held for the listing of the Pecos bluntnose shiner (*Notropis simus pecosensis*) in Artesia and Albuquerque, New Mexico. Questions from the 26 participants ranged from how the designation might affect bait fish seining in the Pecos River to why the proposed Critical Habitat area extended 15 meters on

either side of the stream. All of the comments from these meetings will be summarized and addressed in the final listing package.

Dr. Glen Clemmer (FWS, Fort Collins, Colorado) has begun a small survey for the other subspecies of bluntnose shiner, *N. s. simus*, which is found only in the Rio Grande of New Mexico. Last located in 1964 by Dr. Clemmer, the Rio Grande subspecies was not included in the Pecos bluntnose shiner listing package because there is a possibility that it is extinct. Due to the difficulty in determining if an organism is truly extinct, Dr. Clemmer's work is only the first phase of a two-phase project in cooperation with the New Mexico Department of Game and Fish to survey the historic range of the Rio Grande bluntnose shiner.

One of the ten Sonoran pronghorn (*Antilocapra americana sonoriensis*) radio-collared last October was found dead in July. The "mortality" transmitter on the animal failed to function, so by the time the remains were recovered it was not possible to determine the exact cause of death. However, all indications point to natural mortality. The skeletal remains of the male pronghorn will be sent to the National Museum to be added to the taxonomic collection.

During July and August, three more ocelots (*Felis pardalis*) were captured on private lands in south Texas—an adult male, an adult female, and a 5-pound male kitten that was accompanying the female. Both adults were radio-collared,

continued on page 7

Miccosukee Gooseberry Proposed for Listing as Threatened

The Miccosukee gooseberry (*Ribes echinellum*), a rare and vulnerable plant known only from two locations in Florida and South Carolina, has been proposed by the Service for listing as a Threatened species (F.R. 8/31/84). Its limited habitat could be damaged by potential development and logging activities.

The plant was first discovered in 1924, growing along the shore of Lake Miccosukee in Jefferson County, Florida. It was more than 30 years later that the only other known population was found about 200 miles to the northeast in McCormick County, South Carolina. (Botanists consider the South Carolina location to contain one of the most unusual assemblages of plants in the Carolinas.)

Ribes echinellum is a unique shrub that reaches one meter in height and forms patches that often measure several meters in diameter. It has spiny stems and three-lobed leaves 1-2 centimeters in length. The small flowers are greenish white. Gooseberries are cultivated for their ornamental appearance and their edible fruit. Although *Ribes echinellum* currently is not in commercial demand, the proposed listing could help to ensure long-term protection.

The potential for habitat degradation is the main threat to *Ribes echinellum*. Its localized range at only two sites makes the species particularly vulnerable to any human-related habitat disturbances. The South Carolina population occurs on lands managed as a nature preserve by South Carolina, but increased visitation to the area could jeopardize the plant by increasing the risks of trampling and accidental destruction.

Further research is needed on the species' biology to determine what kind of management it needs. The long-term prospects for the survival of *Ribes echinellum* in Florida are more problematical. This population is on privately owned land and the site has some potential for development. Although the current owner has no such plans for the site, future owners could decide to use it for recreational or residential development. Logging of the hardwood trees associated with the habitat also could jeopardize the population. Some nearby areas have already been logged.

If the proposed rule is made final, *Ribes echinellum* will receive the protection authorized under the Act for Threatened plants. Interstate and international trafficking in this plant will be prohibited, except for properly documented seeds of cultivated specimens. (Permits to carry out otherwise prohibited activities could be available for certain conservation purposes.) Further, under Section 7 of the Act, Federal agencies will be required to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the species' survival by directly affecting the plants or by adversely modifying their habitat. Section 7 protection will apply even though the vulnerability of *Ribes echinellum* to collection for its fruit-bearing and ornamental values makes it imprudent to publicize the population sites with a formal designation of Critical Habitat. These conservation measures will complement the protection already given the species under Florida's own endangered species legislation, which prohibits taking, transport, and sale of the plant but does not control habitat degradation.

Protection Given to Three Rio Yaqui Fishes

Three species of fish, once found throughout the Rio Yaqui Basin which drains southeastern Arizona and adjacent areas in Mexico, have been added to the list of Endangered and Threatened species. The Service has listed the Yaqui chub (*Gila purpurea*) as Endangered, and the Yaqui catfish (*Ictalurus pricei*) and beautiful shiner (*Notropis formosus*) as Threatened (F.R. 8/31/84). All three fishes will now receive protection under the Endangered Species Act.

The three Rio Yaqui species are seriously affected by a variety of habitat modifications. These fishes existed in San Bernardino Creek, Arizona, until the spring flows supporting the creek diminished and the remaining aquatic habitat was destroyed by cattle. Diverting stream headwaters, constructing impoundments, and excessive pumping of underground aquifers are responsible for the reduction in the species' stream habitat. The remaining U.S. populations of Yaqui chub are limited to a few springs on San Bernardino National Wildlife Refuge and to Leslie Creek, both in southeastern Arizona. The shiner and Yaqui catfish have been extirpated from the United States, but they are still found in Mexico. These populations are being affected by the modification of river systems for irrigation agriculture.

Another serious threat to the fishes is the introduction into their habitat of closely related exotic species. Future releases of the red shiner (*Notropis lutrensis*) into the Rio Yaqui system may cause a reduction in beautiful shiner populations through competition or genetic swamping. The Yaqui catfish may be similarly affected by the expanding channel catfish (*Ictalurus punctatus*) and blue catfish (*I. furcatus*) populations that have been introduced and are already established in the Rio Yaqui drainage. This type of interaction has proven to be detrimental to other native fishes found in the same drainage, as shown by the rapid elimination of the Gila topminnow (*Poeciliopsis occiden-*

talis), which was listed as Endangered in 1967. The establishment of exotic fish species in Mexico may also result in intense competitive pressure on existing populations of the Yaqui chub.

On July 15, 1983, the Service published a proposed rule to list the three fishes with Critical Habitat (see BULLETIN Vol. VIII No. 8). Five responses to the proposal were received, all from U.S. State and Federal agencies and the Government of Mexico, supporting the addition of the fishes to the list of Endangered and Threatened species. No comments in opposition were received.

The area designated as Critical Habitat for the Rio Yaqui fishes consists of all the aquatic habitats of the San Bernardino National Wildlife Refuge (NWR) in Cochise County, Arizona. These habitats provide areas for the remaining Yaqui chub population to expand and recover, and are considered by the Service to be prime U.S. reintroduction sites for the beautiful shiner and the Yaqui catfish.

As listed species, all three fishes and their habitat will receive the protection authorized under the Endangered Species Act. This includes recognition of their precarious status, development of plans for their recovery, and possible Federal aid to State conservation programs.

Under Section 7 of the Act, Federal agencies are required to consult with the

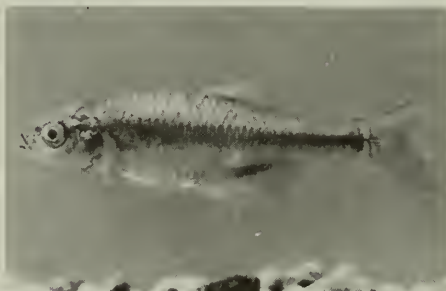
and the beautiful shiner, a special rule has been included to allow take of these species for educational, scientific, or conservation purposes if done in accordance with Arizona State laws and regulations. Although neither of these species is known to survive in Arizona waters, the special rule will apply if any reintroductions are made.

Critical Habitat Designated for Maryland Darter

Short sections of two small streams in eastern Maryland have been designated as Critical Habitat for the Endangered Maryland darter (F.R. 8/31/84). This small member of the freshwater perch family was listed as an Endangered species in 1967. One small population is known from one to two miles of lower Deer Creek, which was designated by the State of Maryland in 1973 as a scenic river. A short stretch of a nearby stream, Gashey's Run (or Gashey's Creek), also may support a breeding population. The Maryland darter has specific habitat needs, requiring clean, shallow, well-oxygenated riffle areas. It seldom has been seen in even the nearby quiet sections of the stream channels.

The Critical Habitat designation was originally proposed in 1978, but was delayed because of changes in the procedural requirements for making such designations. The final Critical Habitat rule, which was based on the recommendations of the State of Maryland, the Maryland Darter Recovery Team, and Fish and Wildlife Service biologists, delineates 2.8 miles of the two streams that appear sufficient for population growth and normal behavior. The Critical Habitat designation reemphasizes the habitat protection that the darter already benefitted from under Section 7 of the Endangered Species Act. Federal agencies are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the Maryland darter or adversely modify its Critical Habitat.

Photo by John N. Rinne



beautiful shiner (*Notropis formosus*)

Fish and Wildlife Service to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of any listed species or adversely affect their habitats. The only possible Federal activity that may affect these species or their habitat is that of geothermal exploration on property administered by the Bureau of Land Management in San Bernardino Valley. This activity is beyond the boundaries of the San Bernardino NWR, but it could affect underground aquifers supplying surface waters to the Critical Habitat.

In addition, other regulations make it illegal to take, possess, sell, or engage in interstate or international trafficking in Endangered or Threatened species, except under permit. For the two fishes listed as Threatened, the Yaqui catfish

Reference Note

All Service notices, along with final and proposed rulemakings, are published in full detail in the *Federal Register*. The parenthetical references given in the BULLETIN—for example, (F.R. 8/20/84)—identify the date that the notice or rule-making action appeared in the *Federal Register*.

Photo by John N. Rinne



Yaqui catfish (*Ictalurus pricei*)

Final Action on Rules Affecting Four Florida Keys Animals

The Service has completed action on two separate rules affecting a total of four animals that occur in the Florida Keys. The Key Largo woodrat and cotton mouse, which earlier had been protected under a temporary emergency action, were given final protection as Endangered species (F.R. 8/31/84). Another rule, published the same day, reclassified the Schaus swallowtail butterfly from Threatened to Endangered and removed another subspecies, the Bahama swallowtail butterfly, from the list of species protected under the Endangered Species Act (F.R. 8/31/84).

Key Largo Woodrat and Cotton Mouse

Both the Key Largo woodrat (*Neotoma floridana smalli*) and cotton mouse (*Peromyscus gossypinus allapaticola*) are distinct subspecies native to Key Largo in Monroe County, Florida. They formerly occurred throughout forested areas on the island, but widespread development has restricted them to remnant habitat on the northern end. (A small population of the woodrat has been established on Lignumvitae Key, where it is not native.) Both species avoid humans and developed areas, and have not been implicated in spreading any human diseases.

Due to their reduced range, specific habitat requirements, and low numbers, both rodents are extremely vulnerable. They were first listed as Endangered on September 21, 1983 (see BULLETIN Vol. VIII No. 10), on a 240-day emergency basis after it was learned that a proposed electrical delivery system could result in development of their remaining habitat. A proposal to make the listing permanent was published in the February 9, 1984, *Federal Register*. Comments received in response to the proposal, along with the Service's replies, are summarized in the August 31, 1984, final listing rule.

Two Swallowtail Butterflies

The Schaus (*Heraclides (Papilio) aris-todemus ponceanus*) and Bahama (*Heraclides (Papilio) andraemon bonhotei*) swallowtail butterflies are representatives of tropical species that reach their northern limits of distribution in southern Florida (Dade and Monroe Counties). Both are rare in the U.S., and were listed in 1976 as Threatened.

Additional research toward the recovery of the butterflies was recently carried out by the Florida Game and Fresh Water Fish Commission, funded in part

by the Fish and Wildlife Service under Section 6 of the Endangered Species Act. The Commission found that the Bahama swallowtail is only an occasional migrant to south Florida from a stable, non-subspecifically distinct population found throughout the Bahama Islands, and therefore is not in need of (or eligible for) continued protection under the Act. Unfortunately, the status of the Schaus swallowtail, which is a distinct U.S. resident, was discovered to have deteriorated to the brink of extinction, due primarily to habitat loss. After reviewing the data, the Service proposed on August 29, 1983, to delist the Bahama swallowtail and reclassify the Schaus swallowtail under the Act to Endangered. The final rule was published on August 31, 1984. This is the first time that the legal status of any federally listed species has been changed from Threatened to the more critical classification of Endangered.

One of the main purposes of the Endangered Species Act, as stated in Section 2, is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved...." One of our nation's most unique ecosystem types is the tropical hardwood hammock; it also is one of the most limited and vulnerable. Once found throughout the Keys and into peninsular Florida, these hammocks have been extensively modified or destroyed through residential and recreational development, and those on north Key Largo represent some of the largest remaining tracts. These constitute the only tropical upland plant communities in the continental U.S., and many rare plants and animals depend on the particular ecological conditions in these areas. Conservation of the remnant hammocks is vital to the survival of the Schaus swallowtail butterfly and the Key Largo cotton mouse and woodrat.

Available Conservation Measures

As Endangered species, the Schaus swallowtail butterfly and the Key Largo woodrat and cotton mouse will receive the full habitat protection authorized under Section 7 of the Federal Endangered Species Act. (All three species were already recognized by Florida as endangered and receive some protection under its own endangered species legislation, but State law does not provide for habitat conservation.) Although a formal Critical Habitat designation for the two rodents has not yet been com-

pleted, the Service expects to publish a final determination within the near future after potential economic and other impacts are considered. Critical Habitat for the Schaus swallowtail was not designated since the butterfly is popular with collectors, and pinpointing its territory could place it in even greater jeopardy.

Collecting of the protected butterfly and mammals, as well as possessing, transporting, and interstate/international trade in these animals, is prohibited, except under permit. Although the Schaus swallowtail already was covered under these protective measures, reclassifying it to Endangered will allow the Service to give increased priority to its recovery needs. The final rule also removes the non-endangered Bahama swallowtail from protection under the Act.

Mariana Islands

continued from page 1

- **Mariana fruit bat (*Pteropus mariannus mariannus*)**. Due to over-exploitation for consumption as a human delicacy, the Guam population of this relatively large bat has declined to only about 500 individuals and has been listed as Endangered. Populations on other islands in the northern Marianas apparently are not in danger of extinction at this time.
- **little Mariana fruit bat (*P. tokudae*)**. This bat is endemic to Guam, and is subject to the same problems facing the larger fruit bat. No specimens of the little Mariana fruit bat are known to have been collected since the 1960s, but it is difficult to identify in the field.

Habitat loss has probably played a part in the decline of all nine animals; however, the rapidity and severity of the most recent decline, along with the presence of some suitable but currently unoccupied habitat, indicates that other problems are more severe. Avian diseases, spread by an introduced tropical mosquito (*Culex quinquefasciatus*), have been a major problem in some areas, and this factor is being investigated by the Guam Aquatic and Wildlife Resources Division with Fish and Wildlife Service funding. Predation by introduced animals may be the most serious reason for the recent devastation of native Guam birds. The brown tree snake (*Boiga irregularis*), also known as the Philippine rat snake, has become widespread on Guam. This arboreal snake could easily prey on eggs, hatchlings, and roosting birds. An indication of the explosive growth in the population of this predacious species is the greatly increasing number of power outages caused when the snakes ascend power-line poles and accidentally short-circuit

the transmission cables; the ground underneath is littered by dead snakes. A variety of other exotic animals also may threaten native birds, particularly the flightless rail.

The nine Guam species were proposed for listing as Endangered in the November 29, 1983, *Federal Register*. For more information on the problems facing Guam's wildlife, see the proposed rule, the August 27, 1984, final rule, or BULLETIN Vol VIII Nos. 1 and 12.

Available Conservation Measures

Since the Territory of Guam and the Commonwealth of the Northern Mariana Islands are under U.S. jurisdiction, all nine of the animals listed in the August 27, 1984, final rule will receive the full protection authorized under the Endangered Species Act of 1973, as amended. The benefits conferred by such a listing include an increased awareness of the species' plight, the requirement for developing a recovery plan, the possibility of Federal aid to local conservation programs, and prohibitions against certain practices. Among the implementing regulations in 50 CFR 17.21 are general prohibitions against such practices as taking, possessing, transporting, and interstate or international trade in Endangered species, except under permit.

A formal designation of Critical Habitat for the nine Guam animals was not made at the time of listing; nevertheless, these taxa and their habitat will receive the full protection authorized under Section 7 of the Act. Federal agencies must ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the listed species or adversely modify their habitat. The only Federal activity currently known that could have a potentially adverse impact on any of the species is the proposed clearing of land containing Guam rail habitat on Andersen Air Force Base. The Air Force is aware of the situation, and is consulting with the Fish and Wildlife Service on ways to improve base security while conserving the rail's habitat.



Mariana fruit bat (*Pteropus mariannus mariannus*)

Endangered Status for Three Western Plants

The protection of the Endangered Species Act has been extended to three plants found in the western United States. Two species native to southern California, *Thelypodium stenopetalum* (the slender-petaled mustard) and *Sidalcea pedata* (the pedate checker-mallow), along with *Frankenia johnstonii*, which is known only from a few sites in Texas and one in Mexico, have been listed as Endangered.

Sidalcea pedata, a member of the mallow family, is a multi-stemmed, perennial herb that bears pinkish-rose flowers. *Thelypodium stenopetalum* is a herbaceous, short-lived perennial having flower petals of lavender or white. Both species grow in the moist alkaline meadows of Big Bear Basin in San Bernardino County, southern California. Although the plants were once abundant, the impoundment of Big Bear Lake in the 1800s and subsequent urbanization have eliminated nearly all of the natural meadowlands in Big Bear Valley—an estimated reduction of from over 7,000 acres to about 1,000 acres. In addition to loss of habitat, these activities also directly destroyed most of the checker-mallow and mustard plants.

More than 85 percent of the historic meadowland habitat that once supported these plants has been eliminated by urban or commercial development and dam construction. Most of the remaining habitat is subject to further development or modification. The pedate checker-mallow occurs in significant numbers at only three locations, all on

private land. Scattered individuals can also be found in a few other areas, but these plants apparently do not reproduce and are expected to die out. The slender-petaled mustard is known to grow in four locations, three of which are privately owned. The fourth site, at Holcomb Valley, is located on National Forest land. The U.S. Forest Service is aware of this population, and has implemented protective measures at the site.

Both *Thelypodium stenopetalum* and *Sidalcea pedata* were proposed for listing as Endangered species on July 15, 1983 (see BULLETIN Vol. VIII No. 8). Seven responses to the proposal were received, all with favorable comments, and they are summarized in the August 31, 1984, final rule.

Frankenia johnstonii occurs in southwestern Texas, and is restricted to five small populations in an area of Zapata and Starr Counties about 35 miles in radius. Several hundred plants also occur near Monterey in Nuevo Leon, Mexico. The species is a small perennial shrub, averaging about 31 centimeters tall, with a blue-green color, a wiry appearance, and tiny white flowers.

All known populations are on privately owned rangelands that are in poor condition. The branches of most plants are hedged or clipped, conditions common on shrubs that have been grazed by cattle. Grazing may also account, at least in part, for the plant's low reproductive success.

Frankenia johnstoni was proposed in the July 8, 1983, *Federal Register* for list-



Micronesian kingfisher (*Halcyon cinnamomina cinnamomina*)

Photo by H. Douglas Pratt

ing as an Endangered species (BULLETIN Vol. VIII No. 8). Of the six comments received on the listing proposal, none opposed the action. The Texas Parks and Wildlife Department was among the supporters, and the final rule listing *Frankenia johnstonii* as Endangered was published by the Service on August 7, 1984.

Available Conservation Measures

As Endangered species, all three plants will receive all the protection authorized under the Endangered Species Act, including recognition of their precarious status, development of plans for their recovery, and the possible availability of Federal aid to fund cooperative State conservation activities. In addition, under Section 9 of the Act, it is illegal to remove and reduce to possession Endangered plants from areas under Federal jurisdiction. This prohibition now applies to the slender-petaled mustard on Forest Service lands in the Holcomb Valley. Further, Section 9 also prohibits interstate or international trafficking in Endangered plants. Permits for these otherwise prohibited activities are available, under certain circumstances, for approved scientific or conservation purposes.

Critical Habitat is not being designated for any of the three plants at this time. Such a designation might encourage vandalism or private or commercial collecting, especially since a Critical Habitat designation requires the publication of range maps and detailed descriptions of population sites. Nevertheless, they will receive the full protection authorized under Section 7 of the Act, which requires Federal agencies to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of the species or adversely modify their habitat.

Experimental Population Regulations are Approved

Procedures for establishing and designating certain populations of listed species as "experimental populations" have been approved by the Service (F.R. 8/27/84). The new regulations implement Section 10 (j) of the Endangered Species Act, as amended in 1982, and are intended to encourage greater State and local participation in species recovery efforts by increasing the flexibility in management of newly established populations.

In the past, plans to reestablish Endangered and Threatened species in unoccupied parts of their historical ranges sometimes met with local opposition because of the legal prohibitions associated with listed species. In 1982, Congress recognized the problem and authorized the experimental population concept. An experimental population is defined as a reintroduced population (including offspring) of a listed species that is geographically isolated from the non-experimental populations of the same species during specific periods of time.

Experimental populations can be classified in one of two categories, "essential" or "nonessential." An essential experimental population is one whose loss would appreciably reduce the likelihood of the survival of the species in the wild. All other experimental populations would be classified as nonessential, and it is anticipated that most would fall into this category.

Under the experimental population designation, listed species would be treated as Threatened, a classification that allows for more exceptions to the taking prohibitions through special regulations (50 CFR 17.84-.86) for the management of each individual population.

Section 7(a)(2) prohibits Federal agencies from authorizing, funding, or carrying out any activity that would be likely to jeopardize the survival of an Endangered or Threatened species. This provision would continue to apply for essential experimental populations and all experimental populations (both essential and nonessential) located on National Wildlife Refuges or National Parks. It would no longer apply to other nonessential experimental populations. However, Federal agencies would still be asked to confer (a non-binding process) with the Service and to treat non-essential experimental populations as if they were species proposed for listing under Section 7(a)(4).

The experimental population regulations were proposed in the January 9, 1984, *Federal Register*. Several minor changes were made in response to some of the comments received; see the August 27, 1984, final rule for details.

Regional Briefs

continued from page 3

and all three animals were released. The total number of ocelots captured and examined by the ongoing south Texas study now stands at 18.

On July 24 and 25, public hearings were held in Tucson and Sasabe, Arizona, on the draft environmental assessment concerning the proposed acquisition of the Buenos Aires Ranch. This ranch com-

prises the only remaining habitat in the U.S. for the masked bobwhite (*Colinus virginianus ridgwayi*). Approximately 100 people attended the Tucson hearing, with comments for and against the proposal evenly divided. In Sasabe, a small border town southwest of Tucson and just south of the ranch, approximately 60 people attended with the majority of comments favoring the proposed action. The environmental assessment is now being finalized.

A recently completed status survey on the Texas Henslow's sparrow (*Ammodramus henslowii houstonensis*) indicates that this subspecies may be extinct. Henslow's sparrow occurred in grassy fields near Houston in Harris County, Texas. In 1973, at least 71 birds were recorded, but only a single sparrow was heard in 1983. A further search in 1984 by Dr. Keith Arnold (Texas A & M University) failed to locate any of these birds.

An interim status report by Joe Marshall, Roger Clapp, and Joseph Czybowski of the Service on the status of the black-capped vireo (*Vireo atricapillus*), a Category 2 candidate for listing, indicates that this species is in serious trouble in Oklahoma. Only two nesting pairs were recorded from a single site this year. Further information will be forthcoming concerning this species' status in Texas. However, past records indicate that its current range may be less than half the range reported in the late 1950s.

Region 4—The Jacksonville, Florida, Endangered Species Field Station has been working closely with the Jacksonville District of the U.S. Army Corps of Engineers in an attempt to better define direct and indirect impacts of marina development on the Endangered West Indian manatee in Florida (*Trichechus manatus*). The Fish and Wildlife Service is concerned that increased marina development in manatee Critical Habitat may increase the number of manatees killed as a result of boat collisions. There are many areas in the State where the Service does not have adequate information on manatee distribution or important manatee resources such as warm water outflow, grassbeds, and shallow and fresh water. As a result of these concerns and the increase in the number of permit applications for marinas, the Service has been working with the Corps on developing a series of studies to attempt to answer some of these distribution questions and to better define critical areas or "hot spots" in Florida where marina development would not be in the best interest of the manatee.

Region 5—The Service's Region 5 Office and the Eastern Regional Office of The Nature Conservancy have recently entered into an agreement to conduct range-wide status surveys on 13 plant candidates and one invertebrate, the dwarf wedge mussel (*Alasmidonta heterodon*), which occur in the eastern and southeastern United States. The project will be initiated this fall and continue through the 1985 field season. The regional endangered species staff plans to expand the project to include additional candidate species as funds become available.

The initial phase of the project will primarily focus on those plants associated with two habitat types that are under ever increasing pressure from development: intermittent ponds (also called Delmarva bays) of the Mid-Atlantic coastal plain and pine barrens plant communities (which include bogs and wetlands). The intermittent freshwater ponds are often ditched and drained to increase agricultural production. The Chesapeake Bay region has been particularly affected by agricultural drainage. The coastal pine barrens of Cape Cod, Massachusetts, Long Island, New York, and southern New Jersey have likewise been impacted by increasing development and suburban sprawl.

The Nature Conservancy, along with each individual State Heritage Program's existing data base and field personnel, will play a significant role in the project. Botanists from New Hampshire to Georgia are expected to be involved. The information developed from the cooperative project will be used to support the listing of those plants that are currently under Federal review or to drop them from further consideration, whichever is appropriate. Those seeking further information on the project should contact Dick Dyer at the Service's regional office, telephone number (617)965-5100, extension 316.

Region 6—Research activities continue on the black-footed ferret (*Mustela nigripes*) population near Meeteetse, Wyoming. These activities are being conducted jointly by the Fish and Wildlife

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	18	19	233	4	0	22	296	21
Birds	59	13	144	3	1	0	220	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	4
Fishes	29	4	11	13	3	0	60	30
Snails	3	0	1	5	0	0	9	6
Clams	22	0	2	0	0	0	24	3
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	4	0	0	12	5
Plants	64	5	1	9	2	2	83	27
TOTAL	219	47	460	50	10	37	823	157**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

**More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 136

Number of species currently proposed for listing: 29 animals
30 plants

Number of Species with Critical Habitats determined: 63

Number of Cooperative Agreements signed with States: 40 fish & wildlife
13 plants

August 31, 1984

Service, the Wyoming Game and Fish Department, and Biota Research and Consulting, Inc. This is a continuation of studies that were initiated in 1982 to determine the ecological requirements, population dynamics, movements, etc. of the black-footed ferret.

The annual summer census of the population has been completed. This year, the population has been estimated at 124 ferrets, with 24 litters. This is an increase from last year, when the population was estimated to be 88 ferrets, with 16 litters. In addition, 11 ferrets were fitted with radio collars this year.

Region 7—Eighty-six Aleutian 'Canada geese (*Branta canadensis leucopareia*) were captured on Buldir Island last month and successfully released on nearby Agattu Island. This makes approximately 400 birds that have been transplanted to this island since 1980.

Hopefully, some of the young geese from this and prior transplants will join the small breeding population that has become reestablished there this year.

Elsewhere in the western Aleutians, a 5-week effort by two animal damage control personnel from Region 6 succeeded in eliminating introduced Arctic foxes (*Alopex lagopus*) from 6,800-acre Rat Island.

In the eastern Aleutians, a banding effort on Chagulak Island resulted in the capture and banding of 20 geese. These birds were banded with green leg bands to facilitate their identification and tracking in their wintering ground. It is estimated that over 100 birds are present on this mountainous island, which is about 550 miles from the Buldir Island population. Nearby Amukta Island was made fox-free last summer, and a small number of Aleutian geese are already using this 12,400-acre island for loafing and foraging.

September 1984

Vol. IX No. 9

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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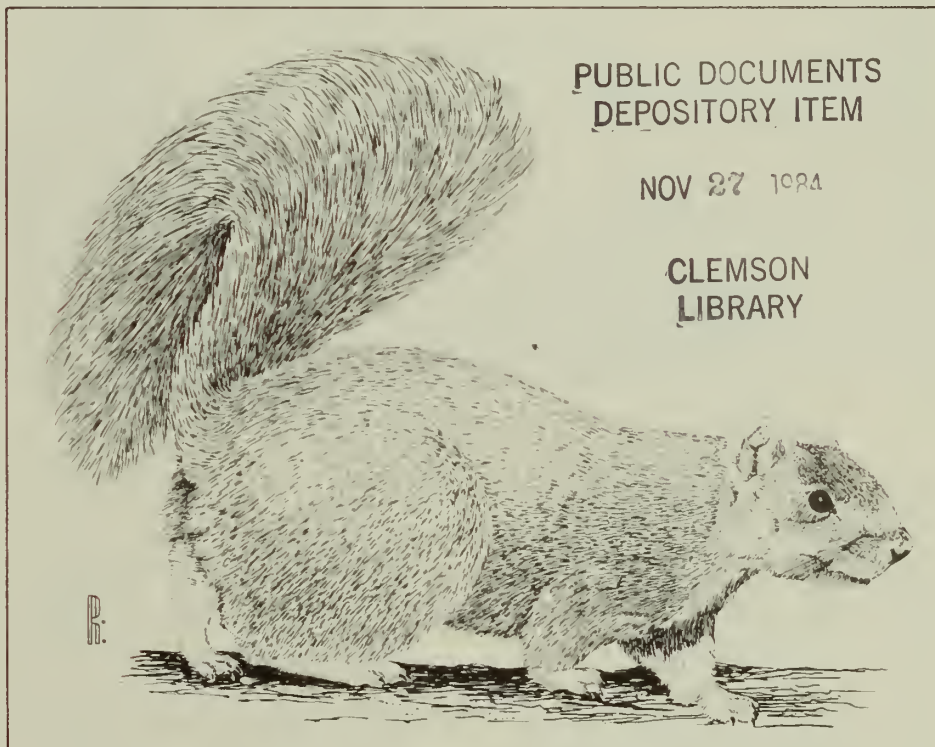
Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
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Endangered Squirrels Released for Experimental Population

Seven Delmarva fox squirrels (*Sciurus niger cinereus*) were taken from Maryland and released September 21 into the Assawoman Wildlife Area, a State-managed area in Sussex County, Delaware, as the beginning of an effort to establish an "experimental population" of this Endangered subspecies. They were the first listed animals released under new Federal regulations that encourage the experimental population approach as a recovery tool (F.R. 8/27/84). The reintroduction of this Endangered squirrel into part of its historical range was made possible by the active participation of the Delaware Department of Natural Resources and Environmental Control, the Maryland Department of Natural Resources, and the U.S. Fish and Wildlife Service.

All seven adult squirrels—four females, three males—were taken from existing populations in Maryland the week before their release and held to be marked and radio-collared. Current plans call for the release of about six additional squirrels (four females, two males).
continued on page 4



California Butterfly Proposed as Endangered

The bay checkerspot butterfly (*Euphydryas editha bayensis*), historically known from the San Francisco Peninsula and its outer Coast Range, has suffered a tremendous reduction in numbers and range. Of the 16 colonies once known, only five remain and these now face the possibility of extinction. In an effort to help conserve the surviving populations, the Service has proposed to list the bay checkerspot butterfly as Endangered (F.R. 9/11/84).

The bay checkerspot butterfly is restricted to grassland areas on shallow serpentine soils that support its larval foodplants. Since 1960, it has been the subject of intensive research by Dr. Paul R. Ehrlich and his associates at Stanford University. They documented the presence of 16 colonies of the

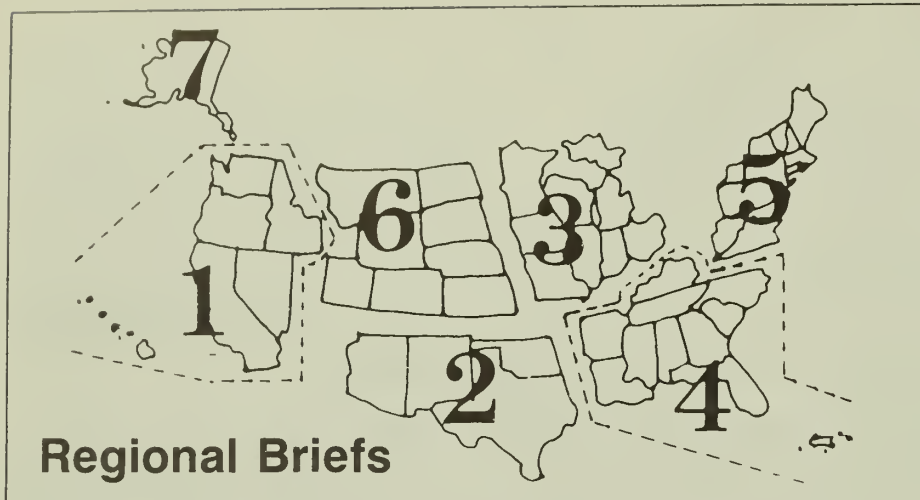
checkerspot, 11 of which have been extirpated by freeway construction, the introduction of exotic plants, overgrazing by livestock, and drought. Four of the five remaining populations, referred to as the San Bruno Mountain, Woodside, Jasper Ridge, and Edgewood colonies, are located in San Mateo County. The largest and most secure colony, Morgan Hill, occurs in Santa Clara County.

The Woodside colony is close to extirpation, if not already gone. Its numbers dropped from approximately 10,000 in 1979 to fewer than 100 in 1982 after the construction of a condominium complex removed all but one acre of the butterfly's habitat. In 1983, not a single butterfly could be found in the area. The San Bruno Mountain colony, another of the remaining popula-

tions of the bay checkerspot, is susceptible to large fluctuations that occasionally bring it to the brink of extinction. The Edgewood, Jasper Ridge, and Morgan Hill colonies are the only three that still appear to be viable at this time. However, the Edgewood colony habitat is threatened by the construction of a golf course and other recreational facilities, and the Jasper Ridge colony is small enough to be prone to large fluctuations in population size. Although the Morgan Hill colony is relatively the most secure, overgrazing and a proposed sanitary landfill pose a threat.

Habitat damage resulting from human activities can reduce the size of a butterfly colony to a level at which natural climatic changes can lead to extinction.

continued on page 5



Endangered Species Program regional staffers have reported the following activities for the month of September:

Region 1—FWS Great Basin Complex personnel recently completed a field survey in southern Nevada to de-

termine the abundance and distribution of the Moapa dace (*Moapa coriacea*). Although they have not completed their analysis, preliminary indications are that the Moapa dace population may exceed that previously projected. These data, along with others gathered during the first year of the Moapa Dace Life His-

tory Study, will be incorporated into the soon-to-be-completed annual report.

The rehabilitation of one of three ponds containing Pahump killifish (*Empetrichthys latos*) at Corn Creek Springs, Desert National Game Range, Nevada, has begun. Personnel from the FWS Great Basin Complex and the Moapa National Wildlife Refuge (NWR); Nevada Department of Wildlife; and the University of Nevada, Las Vegas, successfully moved 4,500 killifish into a holding area until vegetation is removed to deepen the pond.

Results of a Federal/State inter-agency survey of bald eagle (*Haliaeetus leucocephalus*) nesting in Idaho during 1984 have been published. See page 7 of the BULLETIN for details.

Region 2—A radio-collared, female ocelot (*Felis pardalis*) was struck and killed by a vehicle on September 1, 1984, in south Texas. The dead animal was brought to the Laguna Atascosa NWR where it will be preserved as a scientific specimen. The citizen turning in the ocelot was aware of the study being conducted by the Service through an article appearing in the Texas Parks and Wildlife Department's magazine. A finding of this study indicates that motor vehicles may pose a significant hazard to ocelot survival. Three of four ocelot mortalities known to have occurred during the study have been road kills. These animals were discovered because of the radio transmitters they were wearing, which suggests that mortalities in non-radioed ocelots may occur more frequently than reported.

As part of the ongoing razorback sucker (*Xyrauchen texanus*) recovery effort, 10,000 fingerling reared at Dexter National Fish Hatchery were released into the Gila River in Arizona on September 20, 1984, and then monitored to determine their dispersal. During most of the first day, the 7 to 9-inch fish showed little movement, but they began dispersing downstream that evening. Within 48 hours, some fish had moved at least 9 kilometers downstream, while others remained close to the stocking site. In a interesting note, every flathead catfish (*Pylodictis olivaris*) captured within the area contained up to four of the released fingerling suckers. Razorback sucker stocking in Arizona will continue for the next 5 years. Monitoring of the new populations will accelerate through the efforts of the Arizona Department of Game and Fish.

Drs. Clark Hubbs (University of Texas, Austin) and Gerry Hoddenbach (National Park Service) may have lo-

continued on page 4

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U.S. Fish and Wildlife Service Regions

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Seeking a Home for the Red Wolf

by

Warren Parker

Endangered Species Field Supervisor
Asheville, North Carolina

Recent efforts to locate a suitable reintroduction site for the Endangered and perhaps extinct-in-the-wild red wolf (*Canis rufus*) have been frustrating. This species, which once ranged over the entire southeastern United States, may have been eliminated from its original range by the late 1960s or early 1970s. Since then, it has existed mainly as a captive animal while efforts have been underway to reestablish it somewhere in the wild. Today, only 50 animals remain from a population that at one time probably numbered in the hundreds of thousands.

Major hurdles faced by this species include the very name "wolf," which automatically conjures up fear, prejudice, and folk tales; opposition from farmers who raise livestock and fear depredations from another "varmint"; potential interbreeding with the more adaptable coyote (*Canis latrans*); and the plain fact that few areas of suitable size are available today into which reintroductions can reasonably be attempted. Not too surprisingly, some hunters fear the red wolf could decimate deer (*Odocoileus virginianus*) and wild turkey (*Meleagris gallopavo*) populations.

Based on the best available knowledge of the species, few or possibly none of the above mentioned fears are realistic. Red wolves could, given the right conditions, prey on calves that are unattended. They will almost certainly



Photo by Curtis Carley

Today, the red wolf probably exists only in captive breeding facilities.

take an occasional deer, especially a crippled or diseased animal. By and large, however, these animals are secretive, shy creatures that subsist mostly on small animals, fruits, and berries, and that usually avoid contact with man.

Several large federally owned areas in the southeast have recently been investigated as possible transplant sites. One new area in particular remains to be fully examined and evaluated. If it, too, falls from consideration, the red wolf may indeed have run its last race.

Rare Spined Mussel Proposed for Protection



Tar River spiny mussel

Photo courtesy of Museum of Comparative Zoology,
Harvard University

The Tar River spiny mussel (*Elliptio (Canthyria) steinstansana*), a freshwater clam that survives in a short stretch of the Tar River in Edgecombe County, North Carolina, has been proposed by the Service for listing as an Endangered species (F.R. 9/17/84). Biologists estimate that only 100-500 of the mussels remain. With its restricted

range and low numbers, the species is vulnerable to extinction from habitat modification or degradation.

Aside from the Tar River spiny mussel, only two other freshwater spined mussels are known: a small-shelled, short-spined species, *Fusconaia colina*, found only in Virginia's James River, and a large-shelled, long-spined species, *Elliptio (Canthyria) spinosa*, collected only from the Altamaha River in Georgia. The Tar River species is intermediate between these two in shell size (length about 60 millimeters) and spine length. It has been suggested that the mussel's spines help it to maintain an upright position as it moves through soft sand and mud substrates.

The Tar River spiny mussel's known distribution has declined significantly; historical records show that it once occurred both upstream and downstream of its current range. A recent Service-funded survey of the Tar, Neuse, and Roanoke Rivers in North Carolina found that the species is now restricted to about a 12-mile stretch of

the Tar River. Because it has such a limited range and low numbers, the mussel is extremely vulnerable. A single catastrophic event, such as a toxic chemical spill, could cause rapid extinction. Another potential threat could result from the proposed installation of a hydroelectric facility at an existing upstream dam near Rocky Mount, North Carolina. A feasibility study is evaluating the possible restriction of river flow on a daily basis to store water for generating electricity at times of peak power demands. If the hydroelectric project is approved and installed, fluctuating downstream flows could strand mussels on sand bars, and substantially reduced flows could degrade water quality by concentrating agricultural runoff (pesticides and excess nutrients).

If the proposed rule to list the Tar River spiny mussel as an Endangered species is made final, it will receive the protection authorized under the Endangered Species Act. Among the benefits

continued on page 8

Squirrels

continued from page 1

males) in spring 1985, with a third release in the fall of that year for a total reintroduction of about 19 animals.

Continual monitoring of the reintroduced squirrels will be carried out by the Delaware Department of Natural Resources and Environmental Control. The released squirrels will be checked periodically to determine their movement, reproductive success, and general health. Some of the funds for monitoring and managing the Delaware population are coming from the State's new tax check-off program, which allows taxpayers to donate part of their State income tax refunds for conservation of endangered and non-game wildlife. Since Delaware has a cooperative agreement with the Service, it also receives some Federal aid under Section 6 of the Endangered Species Act.

Delmarva fox squirrels once occurred in scattered areas throughout southeastern Pennsylvania, south-central New Jersey, the Virginia portion of the Delmarva Peninsula, eastern Maryland, and Delaware. Its habitat consisted of savannah or park-like areas, forests bordering streams and rivers, and small, open woodlots with little understory. As land use patterns changed and the habitat was converted to agricultural production or invaded by dense undergrowth, the squirrel disappeared from most of its historical range. Today, it is Endangered, surviving only in the Eastern Shore of Maryland and in Virginia at Chincoteague National Wildlife Refuge (where it was reintroduced in the 1970s).

Efforts to restore the Delmarva fox squirrel in former habitat in Maryland over the past 10 years have been successful, and techniques are continually being refined. Monitoring of six Maryland release sites has shown squirrel reproduction in five of them within a year of release. The "donor" populations for the Delaware reintroduction are healthy and are naturally expanding their current range.

Management of the Population

The new Delaware population of the Delmarva fox squirrel has been designated as a "non-essential experimental population" (F.R. 9/13/84), which means that, although the release is expected to aid in the squirrel's recovery, a loss of the reintroduced animals would not jeopardize the subspecies' overall survival.

Under their designation as a non-essential experimental population, the Delaware squirrels will be treated for Section 9 purposes as if they were listed as Threatened. This means that all protective prohibitions of 50 CFR 17.31 will continue to apply, with the exception that the September 13 special rule allows for all squirrels that are accidentally taken to fall under the jurisdiction of Delaware State law. Prosecution of violations of State law, therefore, will rest with Delaware.

For habitat conservation purposes, the experimental population will be treated as a species that is *proposed* for listing. Instead of having to "consult" with the Service on Federal actions that may affect the population, Federal agencies will only have to "confer" (an informal, non-binding process) under Section 7(a)(4).



Delaware and Maryland biologists fitting Delmarva fox squirrel with radio-collar

Regional Briefs

continued from page 2

cated several individuals of a "new" population of Big Bend gambusia (*Gambusia gaigei*) at Big Bend National Park. Originally described from the now dry Boquillas Spring, the species was maintained at the park in an artificial refuge (Spring 4) by the National Park Service until the fish virtually disappeared 27 years ago. Dr. Hubbs salvaged three fish from Spring 4 and the NPS created Spring 1 as a new refugium for the species. The Big Bend gambusia went through a second genetic "bottleneck" in 1975 when water temperatures in Spring 1 fell below normally lethal limits and only 15 individuals survived. Thus, the present stock of Big Bend gambusia is believed to have

a drastically reduced gene pool, and the rediscovery of a few fish still inhabiting Spring 4 may supplement the reduced genetic diversity of the species.

The Big Bend Gambusia Recovery Plan was signed by the Regional Director on September 19, 1984.

Beginning in October, Dr. James Lewis will be directing whooping crane (*Grus americana*) recovery actions from the Region 2 Endangered Species Office as the Service's Whooping Crane Coordinator. Dr. Lewis's past experience with whooping cranes, as well as his ability to work with the numerous Federal, State, international, and private organizations involved with the cranes, will greatly expand and enhance the whooping crane recovery effort.

Region 2 will also welcome the botanical expertise of Dr. Charles McDonald

to the regional Endangered Species Office. Dr. McDonald will work primarily with Oklahoma and Texas plants.

A whooping crane coordination meeting was held recently in Atlanta, Georgia. Discussion centered around the possible selection of an additional whooping crane release site. Potential sites include peninsular Florida, Seney NWR (Michigan), and Okefenokee NWR (Georgia).

Region 3—The annual Endangered Species Coordinators meeting was held in Iowa on September 17–19. All the Region 3 States participated in this meeting, which is held annually to give the State specialists an opportunity to review their accomplishments in the endangered species program and to plan strategies for new activities.

A public hearing on the proposal to list the interior least tern (*Sterna antillarum athalassos*) as an Endangered species was held in Omaha, Nebraska, on September 11, 1984. Approximately 70 people attended the hearing, and 12 of them testified. Most of the comments received were in favor of listing the least tern.

Region 4—The first hacking of peregrine falcons (*Falco peregrinus*) in Tennessee was carried out in August when four young birds were released. These birds, provided by Cornell University, were transported, acclimated, and released at a site on Greenbrier Pinnacle in the Great Smoky Mountains National Park. The release was a cooperative effort on the part of the Tennessee Wildlife Resources Agency, the National Park Service, the U.S. Fish and Wildlife Service, and the Tennessee Valley Authority.

A pair of bald eagles nested and successfully hatched a pair of eaglets this summer in Hyde County, North Carolina. This was the first verifiable nesting in North Carolina of this species since 1970. The nest was situated close to the Mattamuskeet National Wildlife Refuge on private land.

Artificial foraging ponds for Endangered wood storks (*Mycteria americana*) may become a reality in South Carolina. The U.S. Department of Energy's Savannah River Plant has agreed to construct, maintain, and monitor 31 acres of ponds for the benefit of a colony of storks near Millen, Georgia, that would be adversely impacted by the restart of the facility's "L" Reactor. Such conservation work would provide invaluable information on this species, and perhaps indicate that artificial foraging ponds are sound management options.

The Alabama legislature passed a bill on May 21, 1984, prohibiting the taking of flattened musk turtles (*Sternotherus depressus*), a Category 1 candidate species, in Alabama. This law could be a deterrent to overcollecting if it is implemented and enforced. Increased collecting pressure on the flattened musk turtle for commercial purposes was probably generated when the species appeared on the vertebrate notice of review. The notice may have increased the demand for the turtle by signifying its rarity. The State of Alabama has certainly taken a step in the right direction, and a listing of the species could bolster this effort.

The Nature Conservancy has purchased the entrance and surface area

of Cave Springs Cave in Arkansas. Cave Springs Cave contains the largest known population of the Ozark cavefish (*Amblyopsis rosae*), which has been proposed for listing as Threatened, and harbors a summer maternity colony of Endangered gray bats (*Myotis grisescens*). The bat colony consists of about 7,000 bats, including young. A census of Ozark cavefish found 100 individuals this year, and resulted in an estimate that this cave supports 300 cavefish—approximately 60 percent of the species' entire known population. The cave will be maintained by the Arkansas Natural Heritage Commission.

A Regional Brief item in BULLETIN Vol. IX No. 8 incorrectly identified the Cahaba shiner as *Notropis simus*. A scientific description of the Cahaba shiner has not yet been published, and this fish should be referred to as *Notropis* sp.

Region 5—During September 10–13, biologists from The Nature Conservancy, the Tennessee Valley Authority, the Virginia Cooperative Fisheries Research Unit, and the Fish and Wildlife Service participated in a survey of Pendleton Island. The island, located in the Clinch River in southwestern Virginia and recently acquired by The Nature Conservancy, is in the midst of one of the most diverse mussel populations in North America. During the 3-day survey, 36 species of mussels and 44 species of fish were identified.

The Region 5 endangered species staff and the Annapolis, Maryland, Field Office met with staff personnel from the Maryland Department of Natural Resources and the Soil Conservation Service to discuss the Upper Chester River Watershed Channelization Project and to conduct field investigations for Canby's dropwort (*Oxypolis canbyi*), a candidate plant that should be proposed for listing within the near future. The project could affect the only known Maryland population of Canby's dropwort. Federal and State personnel have joined in a cooperative effort to minimize any adverse impacts to the plants.

Region 6—The Rocky Mountain Program of The Peregrine Fund, Inc., completed its move from Fort Collins, Colorado, to Boise, Idaho, on September 13, 1984. The new address is World Center for Birds of Prey, Rocky Mountain Peregrine Program, 5666 West Flying Hawk Lane, Boise, Idaho 83709, telephone 208/362-3716.

Region 7—On August 29, 1984, the National Audubon Society submitted a

petition to list the McKay's bunting (*Plectrophenax hyperboreus*) and the St. Matthew vole (*Microtus abbreviatus fisheri*) as Endangered species. Both species are endemic to St. Matthew Island, an 80,000-acre wilderness area within the Alaska Maritime National Wildlife Refuge. The National Audubon Society and other environmental groups are in litigation regarding a 4,000-acre land exchange between the Department of the Interior and the Cook Inlet Region, Incorporated. Region 7 endangered species staffers are preparing a response to the petition.

Final results are available from this summer's extensive peregrine falcon (*Falco peregrinus*) survey, in which 8 major Alaska rivers—totalling about 2,200 river miles—were travelled by endangered species biologists and our contractors. A total of 132 nesting pairs were observed, 94 American (*F. p. anatum*) and 38 Arctic (*F. p. tundrius*) peregrine falcons. Of the 250 young observed, 198 were banded. Once again, the Yukon River supported a higher density and greater number of nesting pairs than any other river. Of the 94 pairs of American peregrines found nesting in Alaska in 1984, 77 (82 percent) nested along the Yukon River or its tributaries. Similarly, north of the Brooks Range, the Colville River supported 30 of the 38 (79 percent) observed Arctic peregrine pairs. The outlook appears bright, as most Alaska rivers that historically supported peregrines have increasing populations. The one exception is the Tanana River, which formerly supported as many as 14 pairs but has had only 4 or 5 pairs for the last 5 years.

Butterfly

continued from page 1

A severe drought in 1976 and 1977, in association with grazing, caused the disappearance of four colonies of the checkerspot and greatly reduced the Jasper Ridge population. This drought also caused the extinction of some populations of another subspecies of *Euphydryas editha*. It seems likely that, due to the habitat degradation that has taken place, any future drought would be detrimental to most of the remaining colonies of the bay checkerspot butterfly.

Years ago, several small populations of the bay checkerspot butterfly apparently underwent natural extinction and subsequent recolonization from nearby populations. In order for this butterfly to maintain itself in nature, preservation of several colonies in close proximity to each other may be necessary so that recolonization can continue. However,

Butterfly

continued from page 5

as habitat is lost and the number of colonies decreases, the distances among colonies becomes greater and the chances of recolonization decrease. This reason alone makes it imperative to protect the remaining colonies if the subspecies is to survive.

Effect of Listing if Approved

If this proposal is made final, the bay checkerspot butterfly will receive all of the protection authorized under the Endangered Species Act. Conservation measures provided to a species listed as Endangered include better recognition of its vulnerable status, development of recovery actions, possible Federal aid to State conservation programs, and prohibitions against certain practices. Taking, possessing, and interstate and international trafficking in this butterfly will be prohibited, except under permit, if it is listed. In addition, under Section 7 of the Act, Federal agencies are required to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of any

listed species or adversely modify its Critical Habitat.

A designation of Critical Habitat is included as part of the listing proposal.

Critical Habitat designations do not constitute formal refuges or wilderness areas, nor do they prohibit actions of a purely private nature as long as the protected animals themselves are not harmed. Rather, Critical Habitat designations are used by planners in Federal agencies to help them comply with Section 7 of the Act.

Three activities involving Federal agencies are currently known that may have an impact on the checkerspot's habitat—the proposed golf course and recreational facilities at Edgewood Park, residential development of San Bruno Mountain, and the proposed sanitary landfill at Morgan Hill. The Service is notifying the National Park Service and the Environmental Protection Agency, which have jurisdiction over the land and water areas under consideration for this proposed action. Potential economic and other impacts of designating Critical Habitat will be evaluated and considered prior to a final decision.

Comments on the proposal to list the bay checkerspot butterfly as Endangered are invited, and should be sent to the Endangered Species Coordinator,

Region 1 (address on page 2) by November 13, 1984.

The area proposed includes approximately 1,620 acres in San Mateo County and 6,678 acres in Santa Clara County, California. This area does not include the entire historic habitat of the bay checkerspot butterfly, and modifications in the Critical Habitat designation may be proposed at a later date.

Reference Note

All Service notices, along with final and proposed rulemakings, are published in full detail in the *Federal Register*. The parenthetical references given in the BULLETIN—for example, (F.R. 8/20/84)—identify the date that the notice or rule-making action appeared in the *Federal Register*.

We Need Your Help

To make this *your* BULLETIN, as well as ours, we need your help. Please send the Editor any comments for improving the format, ideas for articles, photographs, and reports on current research and management activities.

Three Palau Birds, Now Secure, Proposed for Removal from Endangered List

Three species of forest birds native to Palau, an archipelago in the far western Pacific, have recovered on those islands that suffered habitat damage during World War II, and the Service has proposed that they be removed from Endangered Species Act protection (F.R. 9/19/84). These birds currently are distributed throughout their historical ranges, have stable populations at or near the carrying capacity of their habitats, and are not known to face any significant threats:

- **Palau fantail (*Rhipidura lepida*)** or, in the Palauan language, **melimdelebeteb**—a long-tailed, generally rufous-colored flycatcher about 15 centimeters in length. It is now common throughout the islands in most woody vegetation types, from second growth thickets to mature stands of native forest.
- **Palau ground-dove (*Gallicolumba canifrons*)** or **omekren-gukl**—a mostly terrestrial bird, about 22 cm in length, with an iridescent bronze-to-purplish sheen on its wings and back. Although this forest bird has never

been common, its low population density probably is a natural condition reflecting its need for a large territory.

- **Palau owl (*Pyroglaux* (= *Otus*) *podargina*)** or **chesuch**—a small (23 cm) owl, overall rufous brown in color. It resides in all forest types, including mangroves. The Palau owl became rare on the southern islands during World War II, and was thought to have declined for a time even after the war due to its predation on the introduced coconut rhinoceros beetle (*Oryctes rhinoceros*). (This insect, which can burrow through the thick hull of a coconut, apparently is swallowed whole by the owl and kills it by breaking through the bird's stomach wall.) Since the 1960s, however, the owl's numbers have rebounded and today the bird is abundant throughout the archipelago.

The birds do not seem to face any significant threats at this time. Forest bird habitat on the islands of southern Palau that were damaged by World War II has largely recovered. Currently, about 75 percent of Palau is forested.

Much of this forest habitat should remain intact in future years, particularly on the many small, inaccessible islands in the center of the archipelago that serve as a *de facto* refuge. Further, none of the three birds are sought as game species. All three have been protected by U.S. Trust Territory laws, and continued protection is planned by the independent Nation of Palau upon termination of the Trust agreement. Further, the new constitution of Palau will ban the personal possession of firearms, making it illegal to hunt with such weapons.

If the proposal to delist the three Palau forest birds is made final, it will serve as official recognition that these species are secure and no longer in need of protection under the Endangered Species Act; therefore, such protection will be removed. The birds should continue to prosper under local conservation laws.

Comments on the delisting proposal are welcome from all interested agencies, organizations, and individuals, and should be received at the Service's Region 1 Office by November 19, 1984. (See page 2 of the BULLETIN for address.)

Measures to be Proposed for Reducing Lead Poisoning in Bald Eagles

The Service has announced plans to propose new conservation measures designed to reduce the risk of lead poisoning in bald eagles (*Haliaeetus leucocephalus*).

Bald eagles in most of the 48 conterminous States are listed as Endangered, except in Washington, Oregon, Minnesota, Wisconsin, and Michigan, where they are classified as Threatened. Bald eagle numbers have been increasing in recent years, but the species has not fully recovered from earlier declines caused by the effects of pesticides—particularly DDT—and loss of habitat. Examinations of bald eagles that have been found dead indicate that some have died of lead poisoning.

Lead poisoning in bald eagles has been related to waterfowl hunting because bald eagles sometimes prey on waterfowl, particularly during winter. Biologists have concluded that bald eagles get lead poisoning primarily from ingesting lead shotgun pellets embedded in the tissue of ducks and geese that have been shot, but not retrieved by hunters, rather than from eating waterfowl that have themselves died of lead poisoning. (Waterfowl can develop lead poisoning when they swallow grit, sometimes containing spent lead shotgun pellets, from marsh bottoms to help grind food in their gizzards. Also, lead pellets are mistaken for hard seeds. In either case, if they are retained in the gizzard, they are converted to soluble lead salts, absorbed into the blood, and transported to various parts of the body. Anemia and nerve system disorders are the early signs of lead poisoning.)

In a September 14, 1984, *Federal Register* notice, the Service proposed a conservation effort that would include the establishment of three categories of areas where there is evidence that bald eagles have either died from lead poisoning or could potentially be affected by lead poisoning. While now identified by county, the Service may later refine these areas to more specific ecological units, such as river basins. Currently, the Category I areas, those of the greatest concern, are Siskiyou and Modoc Counties (California), Klamath and Jackson Counties (Oregon), and Holt County (Missouri).

After a review of public comments and any additional scientific data, the Service will make a final decision on whether or not to ban the use of lead shot in these counties during the 1985–86 waterfowl hunting season. If such a ban on lead shot use does take effect, the use of non-toxic (steel) shot

for waterfowl hunting would still be allowed.

Another 14 counties in 11 States (see the September 14, 1984, *Federal Register*, page 36291, for details) are in Category II. A more rapid acquisition and review of lead poisoning data affecting eagles in Category II areas may result in some of these counties being added to Category I. The Service is requesting public comment and all available biological data on whether or not any of these counties should be designated as nontoxic shot zones for the 1985–86 season. For another 10 counties in 7 States—Category III areas—the Service will review whatever additional data become available. The approach for Category III counties will fo-

cus on further research into possible lead poisoning problems unless new information is received that indicates immediate action is needed.

The Service and several States have been studying lead poisoning in bald eagles for about 10 years. The subject of lead poisoning in waterfowl has been a matter of concern for about 50 years, and in 1976 the non-toxic shot program for waterfowl hunting was initiated. In 1984, the Service published non-toxic shot regulations for waterfowl hunting for portions of 32 States. These "steel shot" zones have been created to protect waterfowl, but the protection of bald eagles will undoubtedly receive more attention as non-toxic shot zones are identified and proposed in the future.

Survey Results Encouraging for Bald Eagle in Idaho

Region 1

During 1984, surveys for nesting bald eagles (*Haliaeetus leucocephalus*) were conducted by the Bureau of Land Management in the Brownlee/Hells Canyon reach of the Snake River. In northern Idaho, with joint cooperation from a number of Federal and State agencies, intensive surveys were made to confirm persistent rumors about nesting bald eagles. One occupied nest was found in the Brownlee/Hells Canyon area. Three new nests were confirmed in northern Idaho, two of them productive. Table 1 lists a 6-year reproduction summary of known bald eagle pairs in Idaho:

Table 1. Reproductive summary of known bald eagle pairs in Idaho from 1979 to 1984.

Year	Occupied Nests	Productive Nests	Total Young	Young/Occupied Nest
1979	11	8	10	.91
1980	12	9	13	1.10
1981	13	10	18	1.40
1982	15	9	15	1.00
1983	13	12	17	1.30
1984	20	11	21	1.05

In Table 2, a statistical profile is provided for the 1984 nesting season. Due to the efforts of dedicated biologists in eastern Idaho, an excellent report was filed regarding bald eagle occupancy and productivity. A total of 13 young in eastern Idaho were banded, and they may begin to give us data on dispersal to first nesting sites, mortality sources, and migratory patterns.

Table 2. Statistical summary of bald eagle territories surveyed in Idaho during 1984.

Territories surveyed	22
Number occupied	20
Percent occupied	95
Percent occupied territories successful	55
Successful nesting pairs	11
Young produced	21
Young/occupied territory	1.05
Young/successful territory	1.91
Number of territories not checked	0

Mussel

continued from page 3

it will gain are a better recognition of its vulnerable status, the development of a plan for its recovery, possible Federal aid to State conservation programs for the mussel, and prohibitions against such practices as taking, possessing, or engaging in interstate or international trafficking in the species.

Because of its rarity and uniqueness, the Service decided that publicizing the mussel's exact range with a formal designation of Critical Habitat could increase its vulnerability to illegal taking by collectors. Even without such a designation, however, listing the Tar River spiny mussel as an Endangered species will confer all Section 7 habitat protection. Federal agencies will be required to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the species' survival or adversely modify its habitat.

Potential Federal activities that could have an impact on the mussel include the issuance of permits for hydroelectric facilities, stream alterations, reservoir construction, development of wastewater facilities, and certain road and bridge projects. However, it has been the experience of the Service that nearly all Section 7 inter-agency consultations are resolved so that the species is conserved and the project objectives are met.

Comments on the listing proposal are welcome from all interested individuals, organizations, and agencies, and should be sent by November 16 to the Field Supervisor, Asheville Endangered Species Field Station, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	18	19	233	4	0	22	296	21
Birds	59	13	144	3	1	0	220	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	5
Fishes	29	4	11	13	3	0	60	34
Snails	3	0	1	5	0	0	9	7
Clams	22	0	2	0	0	0	24	13
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	4	0	0	12	6
Plants	64	5	1	9	2	2	83	31
TOTAL	219	47	460	50	10	37	823	178**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

** More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 157

Number of species currently proposed for listing: 31 animals
30 plants

Number of Species with Critical Habitats determined: 63

Number of Cooperative Agreements signed with States: 41 fish & wildlife
14 plants

September 30, 1984

New Publication

A new 1985 *Endangered Wildflowers Calendar* has been published by the American Horticultural Society. The attractive wall calendar (8 1/2 by 23 inches when open) features color photographs of rare plants from all over the United States, data on all species pictured, and information on the problems facing endangered plants in general.

Proceeds from the calendar sales will be used to support conservation projects, including a reward fund for information on surviving individuals of plants thought to be extinct. The calendars are available for \$5.95, and orders should be addressed to the Endangered Wildflowers Calendar, American Horticultural Society, P.O. Box 0105, Mount Vernon, Virginia 22121. Checks should be made payable to the American Horticultural Society.

October 1984

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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Endangered Status Given to Texas Plant

Styrax texana (Texas snowbells), a plant endemic to Edwards, Real, Kimble, and possibly Val Verde Counties in Texas, has been classified as Endangered (F.R. 10/12/84). The principal known threats to this species are its very low numbers and lack of reproductive success. It will now receive all the protection authorized under the Endangered Species Act of 1973, as amended.

First discovered in 1940 by V. L. Cory, *Sytrax texana* is a shrub growing up to 3 meters high with smooth bark and rounded leaves. The attractive white flowers are arranged in clusters of three to five. Flowering occurs in April and May. There is great concern that no seedlings or samplings of *Styrax texana* can be found, which indicates that the species is not reproducing. It has been suggested that the absence of young plants may be due to browsing cattle or deer, but there currently are no data to support this suggestion. More studies are needed. What is clear, though, is that the lack of reproduction may ultimately lead to the plant's extinction.

Only 25 individuals of this species are currently known to exist. This very small



Photo by Chester Rowell

The attractive foliage and flowers of Styrax texana make it vulnerable to collecting for horticultural purposes.

number makes *Styrax texana* vulnerable to a variety of natural and human-related factors, particularly adverse effects on its habitat. A major threat to the habitat of *Styrax texana* is caused by erosion. Most of the sites where the plants occur are privately owned, but

one site is located at a State roadside park. Current maintenance activities at the park are not harming the plants there, but no protection is enforced for the species at this site. Some of the private landowners are amenable to protecting the Texas snowbells located on

continued on page 12

Revised Listing Procedures Adopted

Final rules were published in the October 1, 1984, *Federal Register* to incorporate changes made by the Endangered Species Act Amendments of 1982 in the way the Service lists, delists, or reclassifies Endangered and Threatened species and designates or revises Critical Habitat. The regulations governing the listing process were adopted cooperatively by the Fish and Wildlife Service (Department of the Interior) and the National Marine Fisheries Service (Department of Commerce), which share listing responsibilities under the Endangered Species Act.

Procedures for listing Endangered species are codified in Title 50 of the Code of Federal Regulations as Part 424 (cited as 50 CFR 424). The revision of Part 424 was proposed on August 8, 1983 (F.R. 8/28/83). While preserving the overall framework of the listing process, the 1982 amendments introduced several significant changes that required regulatory revision.

Basis For Determination

Only biological information may now be considered in deciding whether spe-

cies should be listed as Endangered or Threatened. Previously, all proposed listings had been subjected to examination under Executive Order 12291 (which is designed to minimize costs associated with regulations), the Regulatory Reform act, and the Paperwork Reduction Act. In passing the amendments, Congress held that considerations of costs were irrelevant to the scientific determination of whether a species is Endangered or Threatened.

continued on page 9



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of October:

Region 1—The Fish and Wildlife Service recently contracted for a 3-year study of riparian habitat along the

Sacramento River for the presence of the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). This Threatened beetle has not been documented from along the Sacramento River, but some suitable habitat is there. Larval stages of the beetle feed on elderberry, a plant that occurs in the

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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riparian zone along larger rivers in the Central Valley of California. Riparian habitat along the Sacramento River has been rapidly disappearing as a result of agricultural expansion and river channelization.

Funds for the survey were provided by the U.S. Army Corps of Engineers as part of a Section 7 consultation with the Sacramento Endangered Species Office.

The status of the bald eagle (*Haliaeetus leucocephalus*) in California appears to be improving. There were 68 occupied nesting territories in 1984 that fledged 69 young for an average of 1.04 young per occupied site. Twenty-one sites (31 percent) failed to fledge young. There has been a small decline in average production of this population, but it still is slightly above the national average of about 1.0 young per occupied site. There is good evidence that the population is increasing since 19 of the 68 sites were previously unrecorded.

A California condor (*Gymnogyps californianus*) chick was removed from the wild in September for captive breeding and to increase production by allowing the parents to breed again next year. This brings the captive population to 16 individuals, but three of these birds are scheduled to be released into the wild in 1985.

Results of the San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*) breeding and ecology study on San Clemente Island are available. During 1984, nine active pairs were documented. The breeding success of seven of these was 0.86 young per pair. The total population of this Endangered bird is estimated at between 22 and 30. Feral goat grazing has limited nesting habitat, and predation by feral animals (cats and black rats) appears to be seriously impacting nesting success.

Region 2—The American Association of Zoological Parks and Aquariums (AAZPA) recently accepted the red wolf (*Canis rufus*) for development of a Species Survival Plan (SSP). This action will allow for coordinated management of the captive populations in the participating institutions, which include the Wild Canid Survival and Research Center (St. Louis, Missouri), the Point Defiance Zoo (Tacoma, Washington), and the Texas Zoo (Beaumont, Texas). The entire captive population will be treated as one genetic population, and procedures will be developed to reduce inbreeding and to increase genetic di-

continued on page 4

Leatherback Turtle Nesting Beach Becomes Wildlife Refuge

A beach area of about 327 acres at Sandy Point on the island of St. Croix, U.S. Virgin Islands, was purchased in September by the Service for protection as a national wildlife refuge. This site is one of the most important nesting beaches known within U.S. territory for the leatherback turtle (*Dermochelys coriacea*), an Endangered species. During the 1984 season, 28 leatherbacks nested at Sandy Point a total of 141 times. The area also is used for nesting by two other listed sea turtles, the Threatened green (*Chelonia mydas*) and the Endangered hawksbill (*Eretmochelys imbricata*).

Both Sandy Point, which is on the southwestern tip of St. Croix, and the adjacent waters are designated as Critical Habitat for the leatherback. Until recently, Sandy Point was zoned for various kinds of development. If hotels, houses, and shops had been constructed at the site, sea turtle nesting would have been disrupted by lights, structures, and vehicles on the beach, and by people and their pets. As a result, the leatherback population using the nesting beach could have been extirpated. Destruction of turtle nests and killing of adult turtles also has been a problem in the past. As part of the new Sandy Point National Wildlife Refuge, the beach can be better protected during the vital nesting season. For the past 3 years, volunteers from the organization



Photo by Tony Tucker

The leatherback turtle (Dermochelys coriacea) is the largest of the sea turtles; individuals can weigh up to 1300 pounds and reach lengths of 6 feet. Leatherbacks can be easily distinguished from other species by the seven prominent longitudinal keels that divide their backs into six sections. Female leatherbacks nest about six times per season, but usually 2 or 3 years will elapse before individuals return to nest again.

Earthwatch have been active in sea turtle research and in patrolling the beaches.

The commercially valuable Sandy Point property was purchased from a

willing seller for \$2.5 million, which was appropriated by Congress from the Land and Water Conservation Fund.

continued on page 11

Kentucky Plant Proposed As Endangered

A plant endemic to a few sites in Kentucky, *Solidago shortii* (Short's goldenrod), is being threatened by development of its habitat, natural and human-related habitat alterations, and potential recreational activities. Only five populations of this plant remain, all in limited portions of Robertson, Nicholas, and Fleming Counties, Kentucky. Due to its precarious status, the Service has proposed to list Short's goldenrod as an Endangered species (F.R. 10/11/84).

Solidago shortii grows in cedar glades and openings in oak and hickory forests, in pastures, and along roadside areas. This member of the Aster family is approximately one meter tall. It bears yellow flowers between mid-August and early November, and light brown fruits mature several weeks after the flowers wither. Short's goldenrod was first col-

lected by C. W. Short, for whom the plant is named, in Jefferson County, Kentucky. The original collection site, adjacent to the Falls of the Ohio on the Ohio River, was inundated by dam construction. This is the only known population that occurred in Jefferson County and the species is considered to be extirpated there.

One of the largest existing populations (50 to 60 percent of the plants) is located within Blue Licks Battlefield State Park in Robertson County, and all four of the other populations are within 1.5 miles of the park. In 1970, a major segment of this population was destroyed during construction of a campground. A large portion of the remaining plants are within a 1.5-acre area that has been declared a nature preserve where the plants have a good chance for survival. However, proper management techniques for maintenance of the species still need to be determined, and additional protection from accidental trampling or destruction also is necessary.

The other four sites where *Solidago shortii* survive are located on private property or within State highway rights-

of-way. There are no plans to develop these sites at the present time, but construction activities in the future could have a detrimental effect on the species. Any changes in land use, such as intensive agricultural activities, could further rescue or altogether eliminate *Solidago shortii* from these locations. Fires originating along the roadsides adjacent to the sites also threaten the goldenrod's survival.

The small number of surviving individuals (2,000 to 4,000 plants) makes Short's goldenrod vulnerable to overcollecting. The Blue Licks Battlefield State Park Nature Preserve populations of *Solidago shortii* are afforded protection from unauthorized taking by regulations enforced by the Kentucky Nature Preserves Commission and the Department of Parks. However, this prohibition is difficult to enforce. Taking of these plants is authorized through a permit system administered by the Department of Parks and the Nature Preserves Commission, but they are only issued for valid scientific purposes. There are currently no other forms of protection afforded the species.

continued on page 4

Kentucky Plant

continued from page 3

The Service has determined that a designation of Critical Habitat is not prudent for *Solidago shortii* at this time. Curiosity seekers could inadvertently trample the habitat or even collect plants if the exact location of this extremely rare species is pinpointed by Critical Habitat maps. The Kentucky Department of Parks and the Kentucky Nature Preserves Commission also believe that any further publicity about the preserve and this rare species may hinder its preservation. Since the Commonwealth of Kentucky, the Department of Parks, and private landowners on whose property the other populations of *Solidago shortii* occur are all aware of

the species and the importance of conserving it, the Service feels that no additional benefits would result from a formal designation of Critical Habitat.

Effects of the Listing if Approved

If the proposal to list this plant is made final, Short's goldenrod will receive all of the protection authorized under the Endangered Species Act of 1973, as amended. These conservation measures include recognition of the species' vulnerable status, development of plans for its recovery, requirements for Federal protection, and prohibitions against certain practices. Interstate and international trafficking in *Solidago shortii* without a permit will be prohib-

ited, with certain exceptions, if it is listed.

Under Section 7 of the Act, Federal agencies would be required to consult with the Fish and Wildlife Service to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of listed species or degrade their habitat. Until a final decision on this listing proposal is reached, Federal agencies are required only to "confer" with the Service, a non-binding procedure.

Comments concerning this proposal are due by December 10, 1984, and should be sent to Mr. Warren T. Parker, Field Supervisor, Endangered Species Field Station, U.S. Fish and Wildlife Service, 100 Otis Street, Asheville, North Carolina 28801.

Smoky Madtom Given Endangered Classification

A small, rare species of catfish native to eastern Tennessee, the smoky madtom (*Noturus baileyi*), has been listed by the Service as Endangered (F.R. 10/26/84). Currently, the only known population is limited to about 6.5 miles of Citico Creek, most of which is within the Cherokee National Forest in Monroe County. With such a restricted range, the smoky madtom is vulnerable enough that a single catastrophic event (such as chemical contamination) could render it extinct.

The species was discovered in 1957 in Abrams Creek, a tributary of the Little Tennessee River within the Great Smoky Mountains National Park. Members of a Fish and Wildlife Service crew encountered the smoky madtom as they were treating the creek with a fish toxicant. (At the time, it was a standard practice to remove "unwanted" fishes before trying to establish a trout fishery.) It was presumed extinct until its 1980 rediscovery in Citico Creek, another Little Tennessee River tributary. Extensive sampling throughout the region failed to locate any additional populations.

Potential threats to the sole remaining population and its habitat include certain logging activities, road and bridge construction, mining, and any other major projects that could degrade the watershed. In addition to the soil erosion and siltation associated with land disturbances, water pollution could be a serious problem. The Citico Creek watershed contains formations of anakeesta shale, an acid-bearing rock that, if exposed, could seriously degrade water quality. Acid leaching from disturbed anakeesta formations can in-

crease the concentration of sulfides and heavy metals downstream. When this happened at nearby Grassy Branch in 1978, it apparently killed all aquatic life.

Recognizing these threats, the Service published in 1982 a notice of review on the status of the fish (F.R. 6/22/82). After receiving support and information from involved State and Federal agencies, the Service proposed listing the smoky madtom as Endangered (see F.R. 11/21/83 or BULLETIN Vol. VIII No. 12 for details). This proposal was endorsed by the Tennessee Wildlife Resources Agency, U.S. Forest Service, U.S. Army Corps of Engineers, and Tennessee Valley Authority. No opposing comments were received. The National Park Service, which also supports the listing, hopes to reintroduce the fish into its historical habitat within Great Smoky Mountains National Park.

Tennessee State law already prohibited the taking of the smoky madtom without a permit and encouraged conservation of its habitat. This protection is now supplemented by the smoky madtom's classification of Endangered under the Federal Endangered Species Act. Section 7 of the Act requires all Federal agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of a listed species or adversely modify its Critical Habitat. (No such actions are pending.) The area designated as Critical Habitat extends from the confluence of Citico Creek with Barkcamp Branch downstream for about 6.5 miles (see *Federal Register* for map).

Among the other benefits to the smoky madtom from its Endangered classification are: the increased awareness of its vulnerable status; the requirement for the Service to develop a recovery plan; possible Federal aid for State conservation projects; and prohibitions on taking, possessing, and interstate/international trafficking without a permit.

Regional Briefs

continued from page 2

versity. It is hoped that implementation of the SSP will ensure the species' survival. The Service has requested acceptance of the Mexican wolf (*Canis lupus baileyi*) by the AAZPA for an SSP; however, the association is in the process of reviewing internal policy regarding the treatment of subspecies and will make a final decision based on this review at a later date.

Biologists conducting an ongoing peregrine falcon (*Falco peregrinus*) study funded by the Department of the Army on north Padre Island, Texas, have released the results of this season's efforts (September 21–October 21). Two hundred and eight individual peregrines were captured. Eight of the birds had been previously banded. Two of the eight retrapped birds were from Padre Island, and one was from the Colville River, Alaska (having been banded on July 23, 1984). The retrap rate of 3.9 percent compares to the 18 percent of last year. Results from last fall were significantly higher, with 286 individual captures. This year's efforts were hampered by heavy rainfall during the study period, which reduced the amount of trapping time on north Padre Island to 7 days instead of the usual 20–25 days.

In addition, 46 blood samples were taken from the peregrines for electrophoretic analysis by Dr. Don Morizot, University of Texas Systems Cancer Center, to determine the birds' breeding origins. Additional statistics from this study included the trapping of 48 male peregrines, 22 adults, and six injured birds (possibly from powerline collisions).

continued on page 5

Hawaiian Gardenia Proposed for Endangered Listing

One of Hawai'i's rarest endemic plants, the *na'u* or Hawaiian gardenia (*Gardenia brighamii*), has been proposed by the Service for listing as an Endangered species (F.R. 10/12/84). This once common tree has been reduced severely in both range and numbers, and the few surviving specimens are vulnerable to a variety of serious threats.

The Hawaiian gardenia is a distinctive element of the State's remaining native dryland forests. Mature trees reach up to 20-30 feet in height with a spreading canopy of shiny dark-green leaves. Their attractive white to cream-colored flowers are 1-2 inches long, with spreading lobes, and very fragrant.

Historically, the Hawaiian gardenia grew on five of the Hawaiian Islands, but it is now believed to be extinct on Maui and Hawai'i. Only 13 plants are known to survive—10 on Lana'i, 2 on Moloka'i, and one on O'ahu. Extensive habitat loss has been the principal reason for the species' decline. Modification of the dry forest habitat began with the arrival of the first Polynesian settlers and intensified after the arrival of Captain Cook in 1778. Most of the islands' dryland forests have been replaced by pineapple fields (on Lana'i and Moloka'i), sugar cane fields (on O'ahu and Maui), and pastures (on O'ahu,



Photo by C. Lamoureux

Only 13 individuals of the Hawaiian gardenia are known to survive.

Maui, and Hawai'i). Browsing by introduced livestock (both domestic and feral), the spread of aggressive exotic plants, and rapid urbanization also severely degraded native ecosystems, and continue to threaten the remnants of dryland forests.

In addition to habitat damage, the plants themselves face serious threats. Since the Hawaiian gardenia grows on

the dry sections of the islands, there is always the possibility of fire destroying the few surviving trees. The black tree borer (*Xylosandrus compactus*), an accidentally introduced insect, attacks the gardenia's terminal shoots and has severely affected the sole remaining tree on O'ahu. Exotic rats (probably *Rattus rattus*) appear to gnaw the gardenia's

continued on page 7

Regional Briefs

continued from page 4

Results of the helicopter surveys for nesting peregrine falcons conducted in west Texas last spring were recently released. No peregrines were seen during the survey. These results are consistent with the poor reproductive success experienced by the peregrine in Big Bend and Guadalupe National Parks during the last 2 years. Of 15 occupied territories in 1983 and 1984, only four young have fledged. These surveys were funded by the National Park Service and conducted by Frid Fridriksson, an independent researcher formerly associated with the Chihuahuan Desert Research Institute in Alpine, Texas.

Two trout streams previously reclaimed in order to stock pure native trout have been found to still be contaminated with non-native trout. In 1977, Ord Creek on the Fort Apache Indian Reservation in Arizona was treated in order to eliminate exotic brook trout

(*Salvelinus fontinalis*), rainbow trout (*Salmo gairdneri*), and Apache trout/rainbow trout hybrids. The next year, brook trout were still present in Ord Creek, so a second treatment was prescribed. In 1980, no fish were found and pure Apache trout (*Salmo apache*) from a nearby stream were introduced. While the native Apache trout seemed to be doing well in Ord Creek for several years, a recent sample has again turned up brook trout. It is unlikely that brook and Apache trout will hybridize, the former being an autumn spawner and Apache trout a spring spawner, but the non-native will surely compete with the native. No action is planned for Ord Creek until the extent of the contamination is determined.

The second trout stream that still has problems with non-native fishes is Dry Creek on the Gila National Forest in New Mexico. In June 1984, Dry Creek was renovated in order to eliminate brown trout (*Salmo trutta*) and hybrid Gila trout/rainbow trout. The stream was sampled in October, prior to reintroducing native Gila trout (*Salmo gilae*), and found to still contain hybrid fish. Rein-

troduction plans were scrapped (for the present) and another renovation is being planned.

Reports from the whooping crane (*Grus americana*) summer grounds at Wood Buffalo National Park (Canada) and Gray's Lake National Wildlife Refuge (Idaho) are encouraging. Twenty-two Wood Buffalo eggs and ten eggs from the Patuxent Wildlife Research Center were transported to Grays Lake this year. Four of the Patuxent eggs proved to be infertile, but two Patuxent birds and 11 Wood Buffalo Park birds were reared to fledging by sandhill crane (*Grus canadensis*) foster parents. (One of the young birds died of congenital heart failure.) Along with the adult whoopers, the Grays Lake flock may total 35-37 birds migrating to the New Mexico wintering grounds. The wood Buffalo flock set a new record for recent history this year when 28 nesting pairs fledged an estimated 15-17 young. Seventy-five adult whoopers left Aransas NWR in Texas last spring; con-

continued on page 10

Reptile Dealers Sentenced

Two dealers in reptile skins were fined October 15 for illegally peddling the hides of more than 2,500 black caimans (*Melanosuchus niger*), an Endangered crocodilian native to the Amazon River Basin of South America. Brothers Jacques and David Klapisch, along with their wholesale leather company, were fined a total of \$76,000 for multiple violations of the Endangered Species Act. Each man also received a 1-year suspended prison term and 3 years of probation.

Both men were found guilty last May 31 in a Federal district court (New Jersey) on all charges of a 14-count indictment. Jacques Klapisch, the ringleader, was fined \$23,000 and sentenced to 3 years of supervised probation, during which he is not allowed to deal in any reptile skins. [This was not his first conviction for illegal trade in Endangered reptiles; he was convicted twice during the 1970s for trading in the hides of American alligators (*Alligator mississippiensis*) and sentenced to 4 months in jail the second time.] Also fined on October 15 was David Klapisch (\$18,000) and the Meg Import Company (\$35,000).

The maximum sentence possible in the black caiman case would have been \$280,000 and 14 years in prison for each man, and another \$280,000 in fines for Meg Import. Considering the potential penalties, the complexity and duration of the case, and the background of Jacques Klapisch, sources close to the investigation were surprised that the sentences were not greater.



The black caiman is the largest species of New world crocodilian; individuals have been known to exceed 6 meters in length. According to the IUCN Amphibia-Reptilia Red Data Book, hide hunters have so heavily exploited this caiman that it "is now severely depleted virtually throughout its range, and is locally extinct or on the verge of extinction."

Virus Blamed for Whooping Crane Deaths

An extensive investigation into the recent deaths of seven whooping cranes (*Grus americana*) at the Service's Patuxent Wildlife Research Center in Laurel, Maryland, has revealed that the birds fell victim to a virus, eastern equine encephalitis. The virus was transmitted to the birds by *Culiseta melanura*, a mosquito that is not known to bite humans. Biologists do not know what brought this mosquito into contact with the whooping cranes, which are kept outdoors, but the onset of cold weather will kill any remaining mosquitoes this season. By late November, all

of the remaining whoopers appeared to be well. As a precaution, biologists are experimenting with a vaccine on similar, but non-endangered, birds.

The seven birds (five females, two males) that died were part of a captive flock maintained at the research center for breeding. Offspring from the Patuxent flock, which now numbers 32 birds, have been "cross-fostered" with sandhill cranes (*Grus americana*) in an attempt to establish a second wild whooping crane flock migrating between the Bosque del Apache (New Mexico) and Grays Lake (Idaho) National Wildlife Refuges. Only one of the seven Patuxent birds had produced offspring.

The virus was identified jointly by Patuxent, the Service's National Wildlife Health Laboratory in Madison, Wisconsin, the

Center for Disease Control in Atlanta, the U.S. Army's Fort Detrick in Maryland, the Maryland Department of Agriculture, the University of Maryland, and the Department of Agriculture's National Veterinary Services Laboratory in Ames, Iowa.

Reference Note

All Service notices, along with final and proposed rulemakings, are published in full detail in the *Federal Register*. The parenthetical references given in the BULLETIN—for example, (F.R. 8/20/84)—identify the date that the notice or rule-making action appeared in the *Federal Register*.

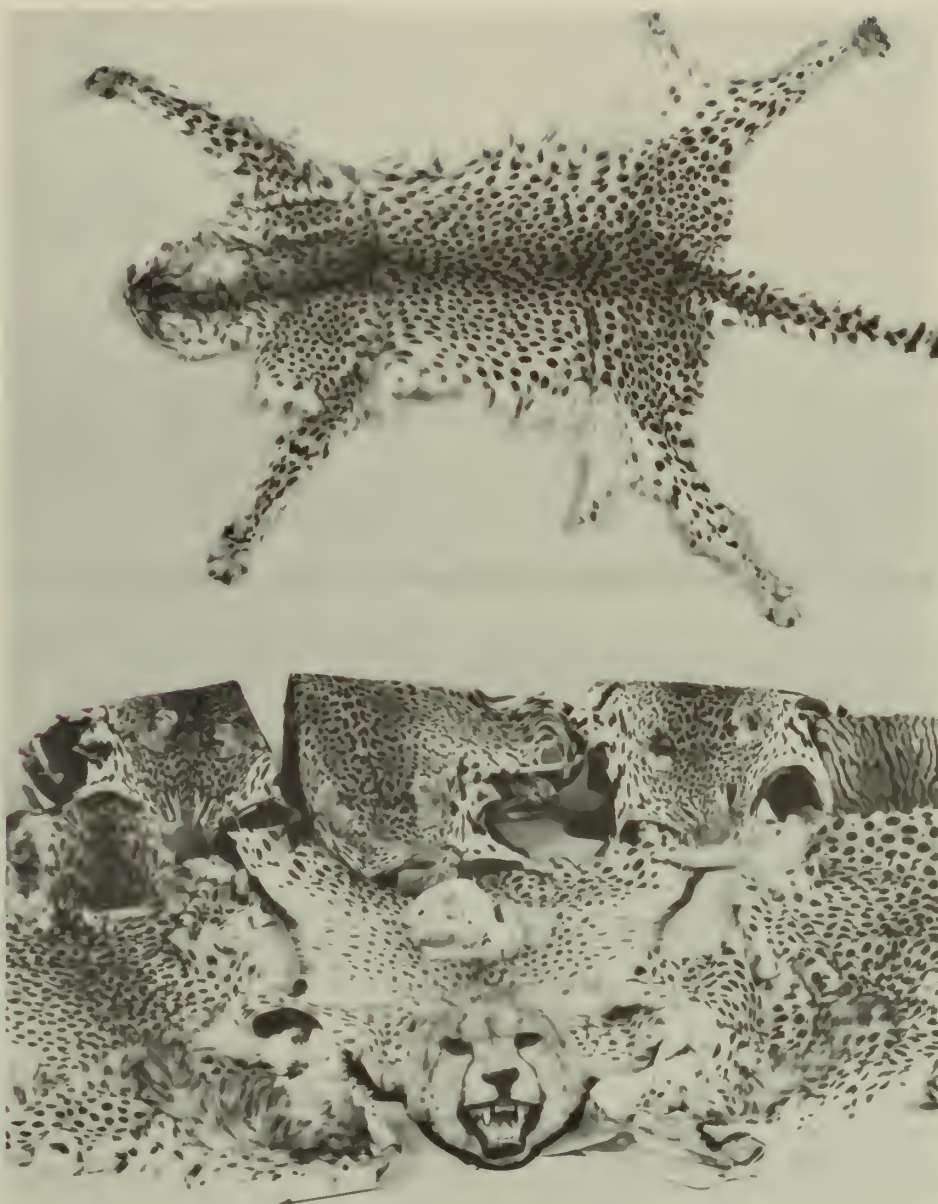
The "exotic" leather trade is very lucrative; a purse fashioned from black caiman skin can bring \$2,500 and an attaché case up to \$10,000.

34 Charged With Violating Wildlife Laws

On October 4, the Service announced that 34 people from 9 States have been charged with violating State and Federal wildlife conservation laws, including the Endangered Species Act. The arrests concluded a widely-ranging, 3-year undercover investigation (code named "Operation Trophykill") of illegal wildlife poaching and trophy smuggling operations.

Fish and Wildlife Service agents covertly ran a tanning and taxidermy business in Colorado, where they detected smuggling of Endangered wildlife skins into the United States and illegal trade in protected species of big game and rare birds. Further charges involve illegal guided hunts around Yellowstone National Park and in Mexico. Some indictments allege illicit trade to the Orient of wildlife parts and products supposed by some people to have medicinal or aphrodisiacal properties.

The Endangered Species Act charges include smuggling skins of the cheetah (*Acinonyx jubatus*), tiger (*Panthera tigris*), jaguar (*Panthera onca*), leopard (*Panthera pardus*), ocelot (*Felis pardalis*), margay (*Felis wiedii*), and American crocodile (*Crocodylus acutus*). Each of these species is in danger of extinction, primarily because of exploitation for their attractive hides. Violations of a number of other Federal laws—the Lacey Act, Eagle Protection Act, Migratory Bird Treaty Act, and conspiracy statutes—also were uncovered during the investigation.



Spotted cat pelts confiscated during Operation Trophykill

Fish and Wildlife Service photo

Hawaiian Gardenia

continued from page 5

fruit while it is still on the tree, severely reducing the chances of successful regeneration. The impact on young trees of trampling by livestock is another factor that needs further study.

Available Conservation Measures

If the proposed listing rule is made final, the Hawaiian gardenia will receive protection as an Endangered species. Potential benefits to the plant of such a listing include the requirement for the Service to develop a recovery plan, possible Federal funding of State conservation efforts, increased recognition of its extremely vulnerable status, and

prohibitions against interstate or international trafficking (as spelled out in 50 CFR 17.61). Since the Hawaiian gardenia does not grow on Federal lands, there are no Federal prohibitions against taking of the plant. However, under Hawai'i's own endangered species legislation, a Federal listing would automatically invoke listing by the State, which does prohibit picking or otherwise damaging listed plants.

Included in the listing proposal is a designation of Critical Habitat for about 685 acres of privately owned land on the Island of Lana'i (see map in the October 12, 1984, *Federal Register*). This area contains a remnant native dryland forest that, although affected by the presence of exotic vegetation and herbivores, is believed to be the best remaining site for long-term survival and

possible augmentation of the only potentially viable Hawaiian gardenia population (10 plants). Conservation of the gardenia will require cooperation among the landowners (Castle and Cook, Inc.), the State of Hawai'i, the County of Maui (which includes Lana'i), and the U.S. Fish and Wildlife Service.

Under Section 7 of the Endangered Species Act, Federal agencies are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of a listed species or adversely modify its Critical Habitat. No such Federal activities are foreseen that may adversely affect the Hawaiian gardenia. Comments on the listing and Critical Habitat proposals are welcome, and should be sent to the Region 1 Director (address on page 2) by December 11, 1984.

Recovery Plans Approved

This month's BULLETIN resumes its summarization of various recovery plans that have been approved during the past year. The January 1985 edition (Vol. X No. 1) will contain a list of all recovery plans approved through the end of calendar year 1984.

Copies of recovery plans are generally available for purchase by the public about 6 months after final approval. Requests should be addressed to the Fish and Wildlife Reference Service, 1776 E. Jefferson Street, Suite 470S, Rockville, Maryland 20852, or call toll-free 800-582-3421.

Spotfin Chub

Known only from parts of the Tennessee River drainage, the spotfin chub (*Hybopsis monacha*) historically

conduct surveys throughout the species' historical range in the Tennessee River drainage. If additional populations are found, habitat protection may be the primary management and recovery tool; however, if no other populations are found, reintroductions into suitable habitat within the species' historical range will be necessary. Reintroducing additional spotfin chubs into one of the tributaries already inhabited by the species also may be useful in accelerating expansion of a population to a self-sustaining level. It may be necessary to rear the species in a hatchery to produce fish for use in reintroductions.

Prior to establishing new spotfin chub populations, the ecological conditions required by the species will need further study. Specific components of the chub's habitat may be missing, and their absence may limit the potential expansion and/or reintroduction of the species. Habitat rehabilitation may be helpful in alleviating these limiting factors. Other threats to the habitat are

quality, the recovery effort will be doomed." With their help, though, the spotfin chub may still recover.

Red Hills Salamander

One of southern Alabama's rarer inhabitants is the Red Hills salamander (*Phaeognathus hubrichti*). This fairly large amphibian (maximum total length about 225 mm) is a rather uniform dark-gray to dark-brownish in color, and takes its common name from its range in the Red Hills section of the Gulf Coastal Plain. Because of threats to the salamander's habitat from certain forestry practices, the species was listed in 1976 as Threatened.

Currently, the Red Hills salamander is found in a narrow band of habitat that crosses parts of Monroe, Conecuh, Butler, Covington, and Crenshaw Counties in south-central Alabama. The best habitat consists of northerly-facing ravine slopes and bluffs that have 1) outcroppings or layers of siltstone, 2)



Spotfin chub

occurred widely in 12 of the river's tributary systems flowing through 5 States. Currently, however, it survives only in four tributary systems: the Little Tennessee River in North Carolina, the Duck and Emory Rivers in Tennessee, and the North Fork of the Holston River in Tennessee and Virginia. The principal cause for the spotfin chub's reduced status is thought to be habitat degradation resulting from impoundments, channelization, pollution, turbidity, and temperature changes. Overcollecting and competition with other fishes also may have played a role in the decline. In 1977, the spotfin chub was listed as a Threatened species.

The *Spotfin Chub Recovery Plan* (approved in November 1983) begins with maintaining viable populations in the four tributary systems where the species is already known to occur. It also calls for protection of any newly discovered or reestablished populations in other rivers. Another important task is to

known but still need further investigation. For example, excess sediment resulting from certain farming and mining practices is causing a major water and substrate quality problem in the upper Little Tennessee River. In the past, pollution from the town in Saltville, Virginia, had a negative impact on the Holston River populations. (The State of Virginia is actively attempting to minimize this problem.) Strict enforcement of existing State and Federal water quality regulations should go a long way toward protecting the remaining habitat.

The Service is working with local, State, and other Federal agencies, and is requesting them to use their conservation authorities. Service representatives also will meet with local industry interests in a direct attempt to persuade those responsible for habitat degradation to take corrective action. To quote the recovery plan, "Without a commitment from the people in these river valleys who have an influence on habitat

mature hardwood tree cover, 3) mesic moisture conditions, 4) abundant forest-floor arthropods (a possible food source), and 5) loamy topsoils. Several of these elements seem to be particularly critical. For example, the salamander's burrows invariably extend into siltstone, a material that retains moisture and enables the salamanders to survive droughts.

The available evidence indicates that the Red Hills salamander is highly specialized, dependent on specific habitat conditions, sensitive to habitat alteration, and low in reproductive and dispersal potential. Major habitat disturbance, including the clearing of forests, severe select-cutting for timber, mechanical site preparation, and conversion of hardwood forests to pine forests, constitute the most serious threat to the species. The ability of the Red Hills salamander to survive forestry operations depends on such factors as the extent

continued on page 9

of canopy removal, the direction of the slope, and the extent of substrate disturbance. *Limited* selective cutting on north-facing slopes is substantially less harmful to the salamander and apparently permits most populations to survive.

According to the *Red Hills Salamander Recovery Plan* (prepared by Dr. Robert H. Mount and approved by the Service in November 1983), returning the species to a completely secure status may not be attainable within the foreseeable future because of habitat vulnerability and other factors. The plan offers, as an interim objective, the goal of preventing the species' further decline to an Endangered status. Since the population structure and dynamics of the salamander are poorly known, even this objective cannot be quantified in terms of numbers of individuals. In terms of land area, however, maintenance of 16,000 hectares (about 39,520 acres) of good-to-optimal habitat, divided into a number of tracts, may be a reasonable goal.

In considering the concept of setting aside conservation management areas or refugia for the Red Hills salamander, the plan emphasizes that the habitat may also be used by local residents for a variety of other purposes. Hunting and fishing for example, would be compatible, as would certain other forms of light recreational use. The extent and type of forestry operations on these lands could

be tailored to the characteristics of the specific site.

Mapping and categorizing suitable habitat is necessary before conservation measures can be proposed. In categorizing habitat for the Red Hills salamander, the dynamic aspects of forest ecology will be kept in mind. It is possible, for example, that some lands

degraded by forestry operations could ultimately regain their supportive potential for the species. Factors such as land ownership and land-use plans also will be studied. Under the recovery plan, the habitat and resident salamander populations will be monitored at 3-year intervals (if possible).



Red Hills salamander

Photo by C. Kenneth Dodd, Jr.

Listing Procedures

continued from page 1

The Act does continue to require consideration of economic and other impacts in designation or revision of *Critical Habitat*, but prohibits the economic examination of an associated Critical Habitat designation from affecting or delaying the *listing* of a species. In order to avoid such an influence or delay when a listing and Critical Habitat designation are proposed concurrently, the revised regulations place the provisions governing impact analysis in a section of the regulations (424.19) separate from those governing listing. In addition, they specify that any consideration of impacts take place only after proposal of a rule, when a deadline for final action has already been established.

Deadlines

Final action on a rule dealing with listing or a Critical Habitat designation must now be taken within 1 year of pro-

posal. The Act previously had required withdrawal of any proposal not made final within 2 years of proposal. A proposal may now only be withdrawn for substantial biological reasons. Exceptions to the 1-year deadline allow a 6-month extension on a proposal when there is substantial disagreement among knowledgeable scientists regarding the sufficiency or accuracy of the data upon which it is based, and a 1-year extension on a proposal to designate Critical Habitat when the Critical Habitat is judged not to be determinable within the original time period.

Petitions

The amendments and the new regulations require specific and timely responses to petitions that seek to list, delist, or reclassify species, or to revise Critical Habitat. A preliminary finding must be made within 90 days of receipt as to whether or not a petition presents substantial information indicating that the petitioned action *may be warranted*.

If the 90-day finding is positive, an additional finding must be made within 1 year of receipt as to whether or not the action *is warranted*. If a determination regarding the status of a species is involved, a positive 1-year finding requires prompt publication in the *Federal Register* of a proposal to carry out the petitioned action. If a revision of Critical Habitat is involved, a positive 1-year finding requires only publication of the Service's intended course of action.

Exceptions to the requirement to promptly publish a listing proposal are allowed if such publication is precluded by other listing proposals and if expeditious progress is being made in listing, delisting, and reclassifying other species.

Readers that require more detailed information on the revised listing procedures or that want to examine the Service's responses to comments on the proposed listing regulations should refer to the final published rule; copies are available from the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Regional Briefs

continued from page 5

sequently, 80-90 whoopers should be returning this fall—a new high for this population.

Editor's Note: Unfortunately, some recent whooping crane news from the Patuxent Wildlife Research Center is not as good. See story on page 6.

Region 3—Efforts are underway to trap and radio-tag bald eagles on the Apostle Islands National Lakeshore (Lake Superior) to determine migration routes and wintering habitat of the eagles that nest there. The National Park Service, in cooperation with the Wisconsin Department of Natural Resources and the U.S. Fish and Wildlife Service, initiated this study to determine the causes of low productivity in the eagles nesting in close proximity to the Great Lakes.

On October 10, 1984, the Circuit Court for the Eighth Circuit held hearings on the Service's regulations pertaining to management of the gray wolf (*Canis lupus*) in Minnesota. The Service published the regulations on August 10, 1983, and on January 5, 1984, the district court prohibited the Service from implementing them. The regulations allow a controlled take of wolves in certain areas of Minnesota, and the plaintiffs argued that this is in violation of the Endangered Species Act. The circuit court's decision is expected within several months.

A peregrine falcon that was released in Toronto (Ontario, Canada) last spring was shot in Michigan and is being treated at the University of Minnesota's Raptor Rehabilitation Center. The bird has about a 50 percent chance of total recovery. It is one of six peregrines received at the center during October. Four injured birds were found in Minnesota and one was found in Illinois. Aside from the falcon that came from Canada, the Illinois bird is the only one that has a fairly good chance of being returned to the wild. The injuries to the five falcons are thought to have been caused by collisions with cars or stationary objects such as powerlines.

Region 4—The U.S. Forest Service has applied for an FWS permit to transplant approximately 100 *Harperocalis flava* (Harper's beauty) plants from the roadside along Highway 65 in the Apalachicola National Forest in Franklin and Liberty Counties, Florida, to three less vulnerable natural bog sites in the forest.

The Endangered Species Field Office in Jackson, Mississippi, recently completed two habitat enhancement projects intended to assist in the recovery of the watercress darter (*Etheostoma nuchale*). One project involved construction of a small pond located downstream from an existing spring pond at the Watercress Darter National Wildlife Refuge in Bessemer, Alabama. The second project involved construction of three small sandstone dams at Glenn Springs. Both projects were intended to create more of the spring pond habitat preferred by this Endangered fish.

Under the direction of Galen Rathbun of the Service's Sirenia Lab in Gainesville, Florida, approximately 20 people from the Jacksonville Endangered Species Field Station, wildlife refuges, the Sirenia Lab, and Sea World relocated two adult captive manatees (*Trichechus manatus*) within Homasassa Springs Park on September 27. Rosie, a 1200-pound animal and Beauregard, a 960-pound rehabilitated animal from the Service's injured manatee rescue program, were relocated to a head springs site that provides for improved captive conditions. They joined Sunrise and Savannah, two captive-bred juvenile manatees being temporarily held at this site prior to their experimental release in the spring.

Preliminary findings from an early summer survey of the Schaus swallowtail butterfly (*Papilio aristodemus ponceanus*) habitat on Key Largo, Florida, indicate that the butterfly populations appear to be stable. These butterflies were also found at two sites not previously recorded. At this stage in the survey, it can be expected that Schaus swallowtails appear in low numbers in any hammocks on Key Largo.

Three additions have been made recently to the staff at the Jacksonville, Florida, Endangered Species Field Station. Earl Possardt, previously with the Endangered Species Office in Washington, D.C., will be responsible for coordinating actions on manatee management and research. He will also be responsible for sea turtle coordination in the southeast. John Paradiso, also formerly with the Washington Office endangered species staff, will be handling the listing of vertebrate species located in Florida and Georgia, and will be working on special projects concerning foreign species. David Martin has joined the staff as regional botanist. He will be responsible for work relating to Endangered and Threatened plants in Florida, Georgia, and other areas of the southeast.

Region 5—Five additional populations of the Virginia round-leaf birch (*Betula uber*) planted last spring are doing well, with a survival rate of about 90 percent. Protective wire cages have been placed around each tree to prevent damage by browsing deer. The Virginia Department of Agriculture and Consumer Services provided considerable assistance in constructing the cages.

A meeting of the Peregrine Falcon Recovery Team and State peregrine falcon release coordinators was held October 10-11 at Acadia National Park, Maine. Items on the agenda included State release plans for 1985, 1984 breeding results, future funding for recovery activities, movement of the captive breeding effort to Idaho, and a very enjoyable visit to the peregrine hack site at the park.

Work was initiated last summer to establish additional populations of the Furbish lousewort (*Pedicularis furbishiae*) along the upper St. John River in northern Maine. The "deauthorization" of the proposed Dickey Dam project and the State's recent declaration protecting about 100 miles of the upper river have brightened the future of this Endangered plant. State and Federal biologists involved in the recovery effort are optimistic about establishing new populations due to the success of the preliminary efforts.

Region 7—In the late 19th and early 20th centuries, naturalists such as Merriam, Elliot, and Allen voyaged to Alaska eager to find and describe new life forms—and they did. Hundreds of islands were visited and scores of new subspecies were described in scientific journals. Endemic to islands or restricted to peninsula habitats, many of these bird and mammal populations are vulnerable to changes in their environment, and are, therefore, potential candidates for listing. Determining the status of these birds and mammals is proving to be a formidable task, as most occur in remote parts of Alaska and have not been studied since their original descriptions in the literature.

We Need Your Help

To make this *your* BULLETIN, as well as ours, we need your help. Please send the Editor any comments for improving the format, ideas for articles, photographs, and reports on current research and management activities.

Notice of Review on Eight Foreign Turtles

The Service has begun reviewing the status of eight species of foreign turtles to determine if they should be proposed for listing under the Endangered Species Act. Among the threats to these species are habitat alteration, exploitation for food, and collection for the pet trade. In the October 5, 1984 *Federal Register*, the Service published a notice requesting further information on the status of the following turtles and their habitat:

- **painted batagur (*Callagur borneoensis*)**—This large estuarine turtle inhabits coastal regions of Thailand, west Malaysia, and the islands of Borneo and Sumatra. The main threat to this species is the overcollection of its eggs for human consumption, a factor which is compounded by the turtle's low reproductive potential.
- **Celebes tortoise (*Geochelone forsteni*)**—Restricted to Celebes, Indonesia, this tortoise is very rare and localized in distribution. There has been only one recent sighting of the Celebes tortoise, despite searches by biologists in the area.
- **Kavalai forest or cane turtle (*Heosemys silvatica*)**—Surveys have located only one small viable population of this species, which occurs within a hilly rain forest in southwestern India. The turtles are

used as food (at least occasionally) by local people, and the species is further threatened by habitat modification.

- **Brazilian sideneck turtle (*Phrynops hogei*)**—This turtle is apparently very rare and confined to two river systems, the Rios Paraiba and Itapemirim. Habitat along the Rio Paraiba is reportedly experiencing damage from pollution and siltation, and some of the tributaries have become dry.
- **Chaco sideneck turtle (*Platemys pallidipectoris*)**—Little is known about this turtle, whose range is centered in Argentina and Paraguay. Only 10 specimens are known to have been collected, although some of these turtles have appeared in the pet trade. Its apparent rarity and vulnerability from commercial exploitation are thought to threaten its survival.
- **South American red-lined turtle (*Pseudemys scripta callirostris*)**—Once abundant, this turtle is now depleted throughout its range, which consists of the lower Magdalena and Sinu drainages of northern Colombia and northwest Venezuela. Some local populations are considered to be extirpated. Turtles and their eggs are heavily used for food, hatchlings are gathered in large numbers to be made

into trinkets for tourists, and habitat may be locally destroyed by fire. Mass commercial exploitation of the species may now have ceased, but large numbers reportedly are still available in Europe.

- **Inagua Island turtle (*Pseudemys malonei*)**—This species is known only from great Inagua Island and on New Providence Island (where it has been introduced), both in the Bahama Islands. About 200–500 turtles are thought to exist. Inadequate rainfall could be a natural factor affecting mortality, and occasionally turtles may be taken for pets or by predatory feral animals.
- **Cat Island turtle (*Pseudemys felis*)**—Another native of the Bahamas, this freshwater turtle is confined to small (2.5 km²) Cat Island. It, too, depends on adequate rainfall for reproductive success. Threats to the species include exploitation for food, collection as pets, and potential habitat destruction due to development.

The Service requests that any additional information, reports, and published literature on these species be sent to the Associate Director—Federal Assistance (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240 by January 3, 1985. Scientific references for the information cited in the Notice of Review are listed in the October 5, 1984, *Federal Register*.

Leatherback Turtle

continued from page 3

Acquisition of the area for conservation purposes was supported by the Virgin Islands Department of Conservation and Public Affairs.

The only other known site of concentrated leatherback turtle nesting within U.S. territory is at a beach on Culebra, a small island near Puerto Rico. In 1984, 25 leatherbacks nested a total of 155 times at this site. Earthwatch also has a major project on Culebra. The Culebra nesting beach is on property owned by the Commonwealth of Puerto Rico and managed in cooperation with the Fish and Wildlife Service.

Sandy Point National Wildlife Refuge



by Dennis Hubbard

Texas Plant

continued from page 1

their property, but plans for its protection at these sites have not yet been determined.

On October 11, 1983, the Service proposed to list *Styrax texana* as an Endangered species (see BULLETIN Vol. VIII No. 10). Seven responses to the proposal were received and they are all summarized in the October 12, 1984, final rule.

Critical Habitat is not being designated for *Styrax texana* at this time. Such a designation, with the required publication of maps and detailed descriptions of the sites, could encourage collection of the plants, especially since it has very attractive foliage and flowers. Nevertheless, even without a formal designation of Critical Habitat, *Styrax texana* will receive the full protection authorized by Section 7 of the Endangered Species Act which requires Federal agencies to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of any listed species or adversely effect its habitat.

Other conservation measures that will now be available for *Styrax texana* include recognition of its precarious status and development of plans for its recovery. Additionally, Section 9 of the Act prohibits interstate or international trafficking in Endangered plants. Permits for these otherwise prohibited activities are available, under certain circumstances, for approved scientific or conservation purposes.

New Publication

A new trade law report is available from the World Wildlife Fund-U.S. *Latin American Wildlife Trade Laws*, by

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	18	19	233	4	0	22	296	21
Birds	59	13	144	3	1	0	220	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	5
Fishes	30	4	11	13	3	0	61	34
Snails	3	0	1	5	0	0	9	7
Clams	22	0	2	0	0	0	24	13
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	4	0	0	12	6
Plants	65	5	1	9	2	2	84	31
TOTAL	221	47	460	50	10	37	825	178**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

**More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 157

Number of species currently proposed for listing: 30 animals
31 plants

Number of Species with Critical Habitats determined: 64

Number of Cooperative Agreements signed with States: 41 fish & wildlife
14 plants

October 31, 1984

Kathryn S. Fuller and Byron Swift, is a country-by-country analysis of the laws that govern wildlife trade in Central and South America. It provides current information about domestic wildlife restrictions in the entire region, and a list of protected and regulated species is included for each country. The 354-page report is designed for use by wildlife importers and exporters, government officials charged with monitoring wildlife imports into their countries, conservationists, and anyone else concerned with trade in Latin American species. Its text is in both English and Spanish. The

report is available for \$11.50 (U.S.) each. Make checks payable to World Wildlife Fund-Trade Law and mail them to TRAFFIC (U.S.A.), 1601 Connecticut Avenue, N.W., Washington, D.C. 20009, U.S.A.

Plans are already underway to expand the report's scope to include other regions of the world, notably Asia, Africa, Oceania, and the Caribbean. Regular updates of the report will include new developments in Latin American wildlife trade laws and expanded coverage of plant trade laws and regulations.

November 1984

Vol. IX No. 11

ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
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Seven Plants in Southern U.S. Proposed for Listing

Seven plants occurring in the southern United States were proposed by the Service during November for listing as Endangered and Threatened species. These plants all face the possibility of extinction, but may benefit from protection authorized by the Endangered Species Act.

Pityopsis ruthii

Pityopsis ruthii, a plant endemic to Polk County, Tennessee, was first collected in the late 1800s by Albert Ruth, a Knoxville botanist, near the Hiwassee River. Commonly referred to as Ruth's golden aster, this plant is a fibrous-rooted perennial that grows only in the soil-filled cracks of phyllite boulders in and adjacent to the Ocoee and Hiwassee Rivers. Its stems range from one to three decimeters tall and bear long narrow leaves covered with silvery hairs. Yellow flowers appear in a panicle inflorescence in late August and September, and fruits develop a few weeks after the flowers fade.

Pityopsis ruthii is being threatened by water quality degradation, toxic chemical spills, and water flow regime manipulations. The two known populations of this species occur on short reaches of rivers in which water regimes are controlled by upstream dams operated by the Tennessee Valley Authority (TVA). Natural water flows in the Hiwassee River, through the area where the golden aster occurs, have been practically eliminated since construction of the Appalachia Dam in 1943. With the elimination of natural flow cycles, annual scouring of the boulders on which *Pityopsis ruthii* grows cannot occur. The result is that more competitive species now are able to invade the boulders, and encroach and overshadow the riverbanks. *Pityopsis ruthii* has little shade tolerance, and is replaced by other species when sunlight is reduced by 50 percent. If current trends continue, it would appear that this species will eventually be displaced from the Hiwassee River.

The Ocoee River population of fewer than 500 plants appears to be subject to detrimental impacts of artificially high flows during the growing season. Present water management practices on the



Pityopsis ruthii (Ruth's golden aster)

river result in frequent high flow conditions that naturally would occur only a few times per year. Although periodic high flows appear to be essential for maintaining suitable habitat, regular high flows may be exceeding the species' capability to withstand this normally beneficial action. Better water management techniques that fall more in line with the needs of *Pityopsis ruthii* are needed if the species is to survive in this location. The U.S. Forest Service and the TVA have jurisdiction over this plant's habitat or essential habitat components. Federal activities that could have an impact on the species include certain water flow management practices, timber harvesting, and recreational development.

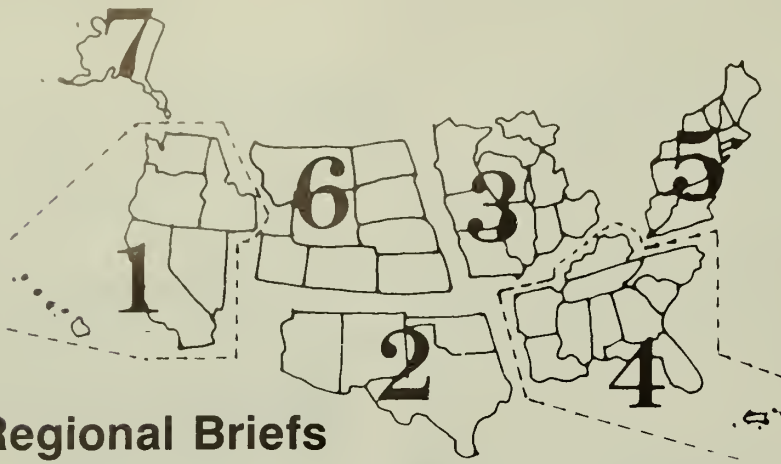
Although there is no legislation in the State of Tennessee that provides protection for *Pityopsis ruthii*, the Committee for Tennessee Rare Plants recognizes the species as an endangered plant, as does the Tennessee Depart-

Pityopsis ruthii is being threatened by water quality degradation and water flow manipulations.

ment of Conservation. This recognition, however, is only a first step toward ensuring the survival of this species. With only two populations known to exist, Ruth's golden aster would definitely benefit from the protection of the Endangered Species Act if the proposal to list it as Endangered (F.R. 11/20/84) is made final.

Comments on this proposal are invited and should be sent by January 22, 1985, to Mr. Warren T. Parker, Field Supervisor, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

continued on page 6



Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of November:

Region 1—The management plan for the Little Kern golden trout (*Salmo*

aguabonita whitei) was recently revised and approved by the Fish and Wildlife Service (FWS), the California Department of Fish and Game, the Sequoia National Forest, and the Sequoia National Park. It set forth a program to recover this Threatened fish, and is avail-

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able for public distribution from the Regional Manager, Region 4, California Department of Fish and Game, 1234 E. Shaw Avenue, Fresno, California 93710.

* * *

Peregrine falcons (*Falco peregrinus*) have been released in Idaho for the third consecutive year. Of the 13 released at 3 hack sites, 12 fledged successfully and were still at their respective sites after one month.

An experiment was conducted recently to see if a one year-old peregrine would adopt a hack site where other falcons of the year had been released. The Peregrine Fund of Ft. Collins, Colorado, provided a male peregrine to Rich Howard, an FWS biologist. This bird initially had been released in 1983 at an Idaho hack site and retrapped after it was observed with a broken leg. The leg was subsequently repaired and the bird was held at Ft. Collins until February 1984. Howard then worked with the bird until it gained enough strength to fly and hunt for itself. It was released about 2 weeks after four falcons-of-the-year had been released at the hack site. During this hacking effort, another male falcon appeared at the hack site. With six peregrines then at the site, there was some concern that one older male would drive the other male away. At the end of August 1984, however, all six birds remained in the area.

* * *

The American Peregrine Falcon Recovery Team for the Pacific Coast recently reported that the number of active eyries observed during the 1984 breeding season was 64 in California and 4 in Washington. No active eyries were observed in Idaho, Nevada, or Oregon in 1984.

* * *

A 1984 census conducted by the California Department of Fish and Game revealed 277 pairs of light-footed clapper rails (*Rallus longirostris levipes*) using 19 marshes; 931 to 1,001 breeding pairs (42 percent fewer than 1983 levels) of California least terns (*Sterna antillarum browni*) that produced 510 to 527 fledglings (20 percent fewer than 1983 levels); 848 breeding pairs of California brown pelicans (*Pelecanus occidentalis*) in the Southern Bight that produced 584 fledglings with a productivity rate of 0.69; and 1,535 southern sea otters (*Enhydra lutris nereis*).

* * *

Region 2—Gerald Burton, an FWS Endangered Species Biologist, represented the Service at the 16th Annual Desert Fishes Council (DFC) meeting held recently in San Luis Potosi, Mexico. Numerous papers were presented on the status of Endangered and

continued on page 10

Listing Proposed for Four Animals

Two Flying Squirrels

Two subspecies of the northern flying squirrel (*Glaucomys sabrinus*), which survive on a few mountain tops in the southern Appalachian Mountains, have been proposed by the Service for listing as Endangered (F.R. 11/21/84). Both are evidently very rare, and are jeopardized by habitat loss, human disturbance, and competition with (as well as lethal parasites carried by) the far more common southern flying squirrel (*Glaucomys volans*).

So-called flying squirrels do not actually fly, but are capable of extensive and maneuverable gliding by means of a furred, sheet-like membrane along the sides of the body between the hind and fore limbs. Only two species occur in North America: the southern flying squirrel, found in extreme southern Canada, the eastern United States, Mexico, and Central America; and the northern flying squirrel, found mainly in Canada, Alaska, and the western and northern sections of the conterminous U.S. The northern species was not known to occur south of New York until 1936, when G. S. Miller, Jr., described the subspecies *G. s. fuscus*, based on specimens collected in the Appalachian Mountains of West Virginia. Later, in 1953, C. O. Handley, Jr., described another subspecies, *G. s. coloratus*, from specimens taken in the Appalachians of eastern Tennessee and western North Carolina. Subsequently, *G. s. fuscus* also was found in southwestern Virginia. It is these two subspecies of the northern flying squirrel that the Service has proposed for listing as Endangered.

Shortly after their discovery, it became apparent that the survival of the squirrels may be in jeopardy. A total of 30 specimens are known to have been collected from only eight localities, and recent efforts have failed to find these squirrels at most of the previous collection sites. Over a recent 40-month period, researcher D. W. Linzey placed 490 nest boxes at 35 sites in 5 States. The boxes were checked regularly and the occupants identified; unfortunately, however, only three individual northern flying squirrels were found during the course of study.

According to Peter D. Weigl of Wake Forest University, *G. s. fuscus* and *G. s. coloratus* occur primarily in the ecotone, or vegetation transition zone, between coniferous and northern hardwood forests. Both forest types provide food, and the hardwoods are needed for nesting sites. Since the northern flying squirrel is adapted to cold, boreal conditions, its range has probably been con-



Photo by Nancy Wells-Gosling

Two subspecies of the northern flying squirrel (above) are facing habitat loss and a competing squirrel species.

tracting since the last Ice Age. In the southern States, it now has only relic-tual distribution, and is restricted to isolated areas at high elevations, separated by vast stretches of unsuitable habitat. The northern flying squirrels and their habitat in these last occupied zones face increasing pressure from logging and development of such recreational facilities as ski resorts.

Forest regrowth after clearing, if any does occur, is usually composed of the deciduous trees favored by *G. volans*, the southern flying squirrel. This species, which is expanding into the range of *G. sabrinus*, is more aggressive, more active in territorial defense, and dominant in competition for nesting areas. When the two species meet, *G. volans* would be expected to force *G. sabrinus* into less favorable habitat. In addition to its competitive behavior, *G. volans* unwittingly employs a form of "biological warfare." It carries a parasite, the nematode *Strongyloides*, to which it apparently has developed natural immunity. When the two species come into contact and the parasite is transferred to *G. sabrinus*, which has no immunity, the results can be lethal.

Available Conservation Measures

If the listing becomes a final rule, *G. s. fuscus* and *G. s. coloratus* will be classified as Endangered and will bene-

fit from the conservation measures authorized under the Endangered Species Act. Taking, possessing, and interstate or international trading in these animals without a permit will be prohibited. The Service also will develop a plan for their recovery to a secure status. Further, Federal grants may become available under Section 6 of the Act to Virginia, West Virginia, North Carolina, and Tennessee for their activities to conserve the squirrels.

The Service believes that a formal designation of Critical Habitat for the two *G. sabrinus* subspecies is not prudent at this time. Flying squirrels in general are popular as pets, and publishing precise Critical Habitat maps could expose the rare subspecies to increased disturbance and collecting. Moreover, the nest boxes placed during the recent status survey are still being used for study, and the squirrels occupying these boxes could easily be taken during their diurnal period of inactivity. Even without the Critical Habitat designation, however, the squirrels and their habitat would receive the full protection authorized under Section 7 of the Act from any adverse effects of Federal actions.

No specific Federal actions are known that may jeopardize the squirrels. Much of the region they inhabit is on national forest land. Therefore, certain activities of the U.S. Forest Service, continued on page 4

Flying Squirrels

continued from page 3

such as timber sales, spraying of insecticides, or development of recreational facilities, may be subject to interagency consultation.

Comments on the listing proposal are welcome from all interested agencies, organizations, and individuals, and should be sent to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240 by January 22, 1985.

nesting beaches. Without protection, the Atlantic Coast breeding population could continue to decline and become extirpated in many other areas; therefore, it has been proposed for listing as Threatened.

The situation facing the Great Lakes breeding population, where fewer than 20 breeding pairs are known to remain, is even more serious, and it was proposed for listing as Endangered. (It should be emphasized that the classifications of "Threatened" and "Endangered" under the Endangered Species Act reflect different degrees of vulnerability to extinction; unless special rules accompany a Threatened listing, the legal protection given Threatened and Endangered species is effectively the same.)

The Canadian Committee on the Status of Endangered Wildlife in Canada (COSEWIC), an organization of specialists from government agencies and private conservation organizations, cited an "alarming decline" in the piping plover throughout the Great Lakes region and the Maritime Provinces, and assigned to it the status of "threatened." In the U.S., Iowa, Illinois, Michigan, Minnesota, New Jersey, New York, Virginia, and Wisconsin already list the piping plover within their borders as threatened or endangered, and Massachusetts plans to add the plover to its threatened list. At a few nesting sites, human intrusion into nesting grounds is prohibited during the breeding season.

Available Conservation Measures

The limited protection already giving the piping plover will be supplemented if the Federal listing proposal becomes final. Although the often ephemeral nature of the plover's nesting habitat and its widely scattered distribution preclude a formal designation of Critical Habitat for the species, all conservation measures authorized under Section 7 of the Endangered Species Act will apply. Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the piping plover by directly affecting the birds or by degrading their habitat.

The U.S. Army Corps of Engineers and the Bureau of Reclamation are the two Federal agencies that might expect to be affected to some degree by Section 7 requirements. Routine management of existing water control systems and the development of some beaches is likely to affect plover habitat. Although no single authorized project known to the Service would imperil the species, the listing proposal points out that it is the loss of "one pair of plovers here and one or two there that pose, in

Piping Plover

The piping plover (*Charadrius melodus*) has been proposed by the Service for protection under the Endangered Species Act (F.R. 11/8/84). This once very abundant bird is now uncommon over most of its range, due principally to disturbance and habitat loss, and it has disappeared from many historical nesting areas.

Piping plovers occupy their breeding grounds from late March to August. Nest sites are along Great Lakes and Atlantic Ocean beaches, bare areas on dredge and natural alluvial islands in the upper Missouri River system, and salt-encrusted, bare patches of sand, gravel, or pebbly mud on interior alkali lakes of the Dakotas, Montana, and Canadian prairie provinces. The nests themselves are shallow, scraped depressions, sometimes lined with small pebbles, and they usually contain four eggs. After breeding ends, the birds winter along the U.S. coast (from North Carolina to Florida and on to Mexico) and in the Bahamas and Greater Antilles.

Two of the piping plover's three breeding populations are proposed for listing as Threatened. One of them, the northern plains population, is scattered throughout Alberta to Manitoba in Canada and Montana to Nebraska in the U.S. Although some good nesting habitat remains at remote saline wetlands in

Saskatchewan and North Dakota, the extensive damming and channelization of rivers in the midwestern U.S. has eliminated open sandbar nesting habitat along hundreds of miles of rivers in Nebraska, Iowa, and the Dakotas. Much of the riverine habitat in the midwest was very similar to that used by the interior least tern (*Sterna antillarum athalassos*), which was proposed for listing as Endangered on May 29, 1984.

Within the breeding ranges of the Great Lakes and Atlantic Coast populations, the loss of sandy beach habitat due to recreational and commercial developments has been responsible for part of the decline in piping plover numbers. Some habitat that remains is unusable for breeding plovers because of disturbances by people and their pets. Human presence can disrupt feeding and incubation or can separate chicks from their parents. Foot traffic and dune buggies can directly crush eggs and chicks. Unleashed pets, feral dogs and cats, and certain wild animals (such as raccoons, skunks, and gulls) that tend to expand into developed areas sometimes prey on birds and their eggs, and can cause adults to abandon nesting areas.

There are estimated to be 900 piping plover breeding pairs along the Atlantic Coast of North America, about two-thirds of them in the U.S. This number is down sharply from historical levels, and the bird is absent from many former



Photo by John Sidle

Piping plovers need undisturbed open habitat, such as this pebbly shore on a North Dakota wetland, for nesting.

the aggregate, the principal threat to the species' continued existence." Through the Section 7 consultation process, the Service will attempt to work with other Federal agencies to find ways of allowing project goals to be met while conserving the plover.

Taking, harassing, and trading in piping plovers are already prohibited under the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), and these protective measures would be reinforced under Section 9 of the Endangered Species Act. Other benefits of a listing include the requirement for the Service to develop a recovery plan for the species and the possibility of Federal aid for cooperating State conservation programs.

Comments on the piping plover listing proposal are invited from all interested agencies, organizations, and individuals, and should be sent to Region 3's Endangered Species Coordinator (address on page 2) by January 7, 1985.

Desert-Dwelling Bird

A rare songbird, the Inyo brown towhee (*Pipilo fuscus eremophilus*), has been proposed by the Service for listing as Threatened (F.R. 11/23/84). Such protection for the subspecies, which occurs only at a few sites in the western part of the Mojave Desert, may be necessary to conserve its very limited riparian habitat.

The Inyo brown towhee is completely isolated geographically from other brown towhee subspecies, and has become adapted to the rigorous desert environment. Its entire available habitat consists of about 2,700 acres scattered within a circle approximately 11 miles in diameter in the Argus Mountains, Inyo County, California. Inyo brown towhees are restricted to the proximity of dense riparian scrub vegetation, particularly arroyo willow (*Salix lasiolepis*), at springs and along water courses. This habitat provides a source of food (insects and seeds) and cover for nesting, roosting, and escape from predators.

Desert riparian ecosystems are, by their very nature, fragile, and are vulnerable to damage from a number of human-related activities. Diversion of the water supply for livestock grazing, recreation, mining, or any other use could have a severe impact on riparian vegetation. Feral burros (*Equus asinus*) pose an additional threat; in fact, they have already damaged some of the riparian habitat by grazing and trampling. The towhee population is estimated to number fewer than 175 individuals. Because the remaining habitat is so restricted, further degradation could result in serious population losses.

The proposal to list the Inyo brown towhee as Threatened includes a designation of Critical Habitat for the 2,700

acres of available riparian scrub near springs on, or in the vicinity of, the China Lake Naval Weapons Center. All but a tiny portion of this land (about 31 acres) is administered by the U.S. Navy and the Bureau of Land Management (BLM). Both agencies control the use of lands under their jurisdiction. If the listing proposal is made final, these and all other Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the Inyo brown towhee or adversely modify its Critical Habitat. Preliminary contacts with BLM and the Navy have not revealed any current or proposed programs that would adversely affect the habitat. Both agencies are planning a cooperative program to conserve riparian habitat on lands under their jurisdiction.

Other benefits to the Inyo brown towhee of a Threatened listing would include the increased recognition of its vulnerable status, possible Federal aid to cooperative State conservation programs, and restrictions on such activities as taking, harassing, or trading in the birds.

Comments on the listing proposal are welcome from all interested agencies, organizations, and individuals, and should be sent to the Regional Director (SE), Region 1 (address on page 2), by January 22, 1985.

Two Animals and One Plant Added to List of Threatened and Endangered Species

Amargosa vole

Twice since its discovery in 1900, the very rare Amargosa vole (*Microtus californicus scirpensis*) was feared to have become extinct. Fortunately, however, a small population found in the 1970s still survives in marshes near Tecopa, California. This small mammal has now been listed as Endangered (F.R. 11/15/84), an action that will give protection to both the vole and its habitat.

The Amargosa vole is a small, mostly gray, mouse-like rodent. It was first collected from a marsh near the town of Shoshone in southeastern Inyo County, California. Marsh vegetation, primarily bulrush (*Scirpus olneyi*), is particularly important to the vole since it provides cover for escape from predators and serves as a food source.

The vole occurs in an extremely arid part of California, and bulrush marsh habitat is restricted to the vicinities of springs or sections of the intermittent Amargosa River that have permanent flow. This limited amount of habitat is extremely vulnerable to modification



Photo by Denise LaBerteaux

Research on the Inyo brown towhee shows its vulnerability to degradation of desert riparian habitat.

and destruction from a variety of land uses. Marshland at the type locality near Shoshone, for example, was burned in the early 1900s and turned into a hog pasture, and the spring feeding it was diverted for construction of a swimming pool. Within the currently occupied range, development of the Tecopa Hot Springs area for mineral baths, together with the spread of mobile-home courts, has greatly modified or even eliminated a significant amount of suitable habitat. Burning and livestock grazing threaten the remaining marshlands.

In recognition of these threats, the Service published in the August 29, 1983, *Federal Register* a proposal to list the Amargosa vole as Endangered and to designate its Critical Habitat (see BULLETIN Vol. VIII No. 9). Most of the five comments received in response to the proposed rule, including those of two California State agencies, supported the proposed actions, and are summarized in the November 15, 1984, final rule.

continued on page 6

Additions to List

continued from page 5

As an Endangered species, the Amargosa vole will receive the protection authorized under the Endangered Species Act. Taking, possessing, and interstate or international trafficking in this mammal are now prohibited, except under permit. These restrictions reinforce the actions already taken by the State of California under its own endangered species legislation, which prohibits direct taking but does not protect habitat. Since California has an endangered species cooperative agreement with the Service, it is possible that Federal funding through Section 6 of the Act could become available to the State for Amargosa vole research and recovery work. In addition, because it is now listed, the Service is responsible for developing a recovery plan for the vole.

Under Section 7 of the Endangered Species Act, Federal agencies must ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the Amargosa vole or adversely modify its Critical Habitat. The marshes and associated areas designated as Critical Habitat are scattered within an overall zone of 4,520 acres in southeastern Inyo County (see final rule for map). Approximately 2,060 acres within this zone are administered by the Bureau of Land Management. An analysis of potential economic effects of a Critical Habitat designation revealed that there should be no significant impacts.

Ozark cavefish

A true troglobitic species, the Ozark cavefish (*Amblyopsis rosae*) is blind and nearly devoid of pigment. After apparently disappearing from more than 40 percent of its historical range, this species has been listed by the Service as Threatened (11/1/84). The small (average total length 50 mm) fish currently is known to survive within 14 caves in 6 counties of the Springfield Plateau of southwest Missouri, northwest Arkansas, and northeast Oklahoma. Habitat alteration, primarily in the form of groundwater pollution, and overcollection appear to be the primary reasons for the decline.

Sinkholes in the soluble limestone bedrock of the Springfield Plateau drain surface waters that are vulnerable to chemical spills, landfill or dump discharges, or human and animal waste disposal. Another threat to the cavefish, that of overcollecting, is complicated by the species' confined habitat and inability to elude captors. There are several documented instances of collectors taking large numbers. As far as commercial exploitation, offers to purchase cavefish have appeared in various publications, and pet stores often feature blind cavefish as curiosities.

The Ozark cavefish was proposed by the Service for listing as a Threatened species on January 31, 1984 (see BULLETIN Vol. IX No. 2). Twenty-six comments on the proposal were received. Among those in support of the listing were the State conservation or wildlife agencies of Missouri, Arkansas, and Oklahoma. These comments are summarized in the November 1 final rule.

As a Threatened species, the Ozark cavefish will receive the same protection under the Endangered Species Act as the Amargosa vole. A formal designation of Critical Habitat for the cavefish was not published because pointing out the localities where it occurs could facilitate illegal collecting; however, its habitat will receive the full protection authorized under Section 7 of the Act. A recovery plan for the species will now be developed. In addition, because Arkansas and Missouri have Section 6 agreements with the Service, Federal aid to protection and recovery programs in these States may become available.

Gouania hillebrandii

Due primarily to the effects of grazing and invasions of exotic plants and insects, *Gouania hillebrandii*, a species of shrub known only from a few sites on the Island of Maui in the Hawaiian Islands, is on the verge of extinction and has been listed as Endangered (F.R. 11/9/84). *Gouania hillebrandii* is one of the few remaining Hawaiian species in its genus.

This plant, which grows up to 6 feet in height, has slender branches covered with a rust or ash-colored fuzz and oval leaves that are dark green on top. The

flowers are small, fragrant, nearly white, and number 3-5 on each inflorescence.

Introduced feral and domestic livestock (cattle and goats) probably have been the greatest threat historically to the habitat of *Gouania hillebrandii*. These animals browse the plant and compact the surrounding soil, which promotes erosion and favors the spread of competing exotic plants. Accidentally introduced insects also are taking a toll. The insect herbivore *Pinnaspis strachani* (hibiscus snow scale) has weakened or killed many of the plants, and unknown chewing insects have caused extensive leaf damage in others.

The Service proposed listing *Gouania hillebrandii* as an Endangered species on September 7, 1983 (see BULLETIN Vol. VIII No. 10), and the proposal was subsequently endorsed by the Hawaii Department of Land and Natural Resources and the Maui County Council. Included in the listing was a designation of Critical Habitat for four small areas totalling about 112 acres in the Lahaina District (see final listing notice for map). Within the area are the dry, exposed ridge crests and north-facing slopes where the surviving populations occur. Only those sites have freedom from unrestricted grazing and the specific wind, soil, and drainage characteristics needed to discourage harmful plants and insects.

Regulations for listed plants differ under the Endangered Species Act from those for listed animals. Section 9(a)(2)(B) of the Act makes it illegal to remove and reduce to possession Endangered plants from areas under Federal jurisdiction; however all known individuals of *Gouania hillebrandii* occur on State lands. Fortunately, taking the plant is prohibited under Hawaii's own endangered species legislation. Interstate and international trade in this plant, though not anticipated, is prohibited under the Federal Act. The species will also receive Section 7 protection against potential harmful impacts of Federal actions. Further, since the State of Hawaii has an endangered species cooperative agreement for plants with the Service, there is now the possibility of Federal funding for State conservation programs.

Seven Plants

continued from page 1

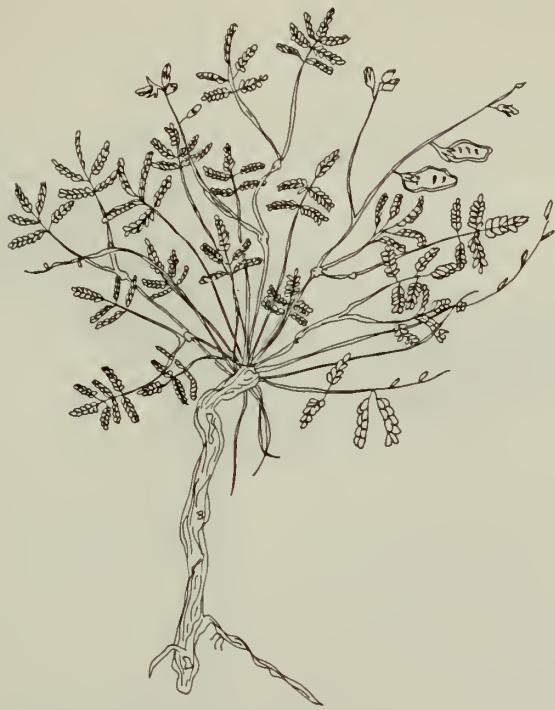
Hoffmanseggia tenella

A perennial member of the bean family, *Hoffmanseggia tenella* has stems that grow from 8 to 15 centimeters tall and terminate into a 3 to 5-flowered inflorescence. The flowers are orange and usually begin blooming from early

March to June, then appear sporadically thereafter depending upon the rainfall. Commonly known as the slender rush-pea, this plant is historically known from three localities in Nueces and Kleberg Counties, Texas, but it now exists as only one population with three individual plants. This population is found in the Blackland Prairie Area of the Gulf Coastal Prairie, where it grows in the hard clay soil of creek banks and associated barren areas. Two of the individ-

ual plants are on private property, and the third is on an adjacent State highway right-of-way.

The most serious threat to *Hoffmanseggia tenella* is habitat alteration. Habitat for this species in the Texas Gulf Coastal Prairie has been severely limited because non-native grasses, such as King Ranch bluestem and bermuda grass, have escaped into uncultivated areas. As a result, native plants are being eliminated by these encroaching



Hoffmanseggia tenella (the slender rush-pea)

species. In addition, private and public landowners have altered the natural habitat to prevent soil erosion, improve rangeland, and control prairie fires. These practices have destroyed the natural characteristics of the Texas Gulf Coast Prairie and, in turn, greatly disturbed the slender rush-pea's habitat. With only one tiny population in existence, this species is extremely vulnerable and subject to extinction if there is further modification of its habitat.

Since there are currently no Federal or State laws protecting *Hoffmanseggia tenella*, the Service has proposed to list it as an Endangered species (F.R. 11/21/84). With only one known population trying to survive in the midst of rapidly diminishing habitat, the protection authorized by the Endangered Species Act may be the only way to rescue the slender rush-pea.

Comments on the proposal to list this species are invited and should be sent by January 22, 1985, to the Regional Director, Region 2 (address on page 2).

Five Florida Plants

Five Florida pine rockland plants in Dade and Monroe Counties also have been proposed by the Service for listing under the Endangered Species Act (F.R. 11/7/84). Four of these plants, proposed as Endangered, have already been extirpated over most of their historic range and could easily become extinct in the near future. The fifth species, which is proposed as Threatened, has been largely extirpated throughout its former range and is now in danger at one or more of its five remaining sites.

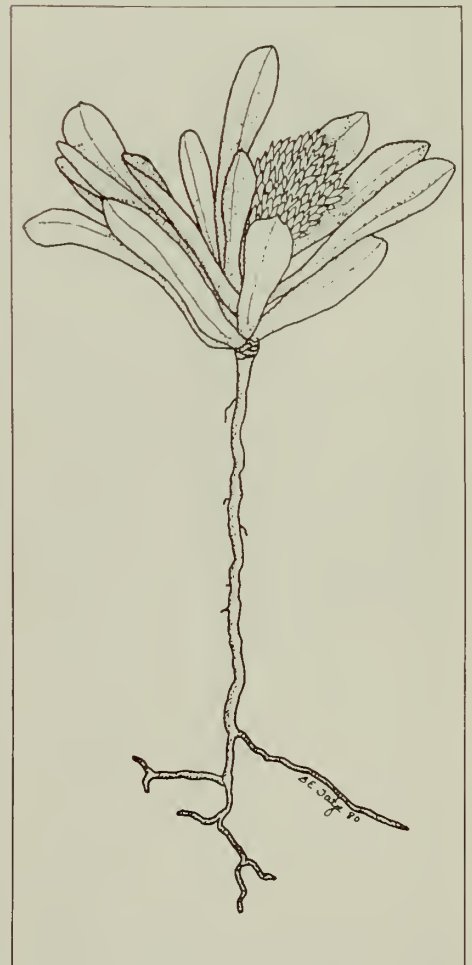
Formerly, pine rockland plants were widely distributed along the south Florida limestone ridge, an area about 65 miles long extending from southeastern Broward County to Long Pine Key in Everglades National Park. The ridge reaches 3 to 5 meters in elevation and provides a markedly different habitat for plants and animals than the marshes and wet prairies that dominate the surrounding areas. The substrate consists of porous limestone, known as Miami oolite, covered by poorly developed soils that are mainly a thin layer of sand. Erosion of the limestone results in frequent holes and jagged surface features, and many plants thriving in these pine rocklands are rooted in crevices in the limestone.

Residential and commercial development of the pinelands began early in the twentieth century and accelerated after 1930. A recent survey estimated that 98 percent of the Dade County pinelands outside of Everglades National Park have been destroyed. This vast reduction in habitat greatly contributed to the decline of the following four species, which now are proposed for listing as Endangered:

- ***Euphorbia deltoidea* ssp. *deltoidea*** (spurge) is a prostrate herbaceous plant with thin wiry stems, deltoid to ovate-shaped leaves, and unisexual flowers. This species formerly occurred throughout the pinelands but is now restricted to eight sites in the vicinity of Cutler Ridge and Perrine and two near Homestead.

- ***Galactia smallii*** (Small's milkpea) is a small vine with compound leaves and pinkish flowers. The former range of this species is poorly known, but it is currently known from only two sites near Homestead.
- ***Polygala smallii*** (tiny polygala) is an erect biennial herb with short branched or unbranched stems that end with clusters of small yellow-green flowers. This species formerly ranged from southeastern Broward County to the Cutler area in Dade County, but is now known to exist at only two sites in the Cutler area.
- ***Amorpha crenulata*** (crenulate lead-plant) formerly occurred throughout the pinelands in the Miami-Coral Gables area. This shrub grows up to 1.5 meters tall, has compound leaves that bear 25-33 leaflets, and bears flowers with a single petal only 6 millimeters long. At present, only two highly restricted sites within the Miami city limits are known to support this species.

Euphorbia garberi (Garber's spurge), which is proposed for listing as a Threatened species, is a prostrate
continued on page 10



Polygala smallii (tiny polygala)

Recent Advances in the California Condor Research and Recovery Program



Photo by Fred Sibley

by
Robin B. Goodloe
Endangered Species
Research Branch
Patuxent Wildlife Research
Center

The California condor (*Gymnogyps californianus*), a New World vulture that weighs approximately nine kilograms and has an average wingspan of three meters, is one of the world's most endangered species. The condor may never have been abundant, although fossil records indicate that the species' historical distribution extended from the Pacific Northwest south to northern Mexico and as far east as Texas and possibly Florida.

California condor numbers and range have declined sharply since the early 1900s, despite more than 40 years of research and management efforts. Currently, the wild population in southern California is thought to number 17 to 19 free-flying birds, with an estimated net loss of about 2 individuals annually. The causes of the species' decline at various periods may include shooting, inadvertent and deliberate poisoning, collisions with powerlines, habitat destruction, and reduced productivity (possibly due to nest disturbance, environmental contaminants, a skewed sex ratio, or loss of genetic diversity). These factors, or factors yet unknown, have resulted in levels of mortality that far exceed the species' natural productivity.

During the past few years, research by U.S. Fish and Wildlife Service (FWS) and National Audubon Society (NAS) personnel, in cooperation with the California Department of Fish and Game (CDFG), U.S. Forest Service, U.S. Bureau of Land Management, the San Diego and Los Angeles Zoos, and other cooperating agencies, has focused on increasing condor productivity in the wild; efforts toward future rees-

tablishment of self-sustaining populations through releases of captive-reared birds; identifying mortality factors; and locating essential condor habitat.

Studies at the Condor Research Center (CRC) in Ventura, California, are conducted by Project Leader Dr. J. Michael Scott and Dr. Noel F. R. Snyder, both of the FWS; John C. Ogden and other NAS biologists and technicians; and Steve Kimple of the CDFG; with general supervision by Dr. H. Randolph Perry, Jr., Alexander Sprunt, IV, and Ronald Jurek of, respectively, the FWS's Patuxent Wildlife Research Center (PWRC) in Maryland, the NAS, and the CDFG.

Research efforts by the cooperating agencies have led to major advances in the development of accurate censusing and radio-telemetry techniques, establishment of a captive flock for the breeding program, and identification of important condor nesting, roosting, and foraging areas.

Condor Population Size

Estimates of population size in the early and mid-1900s were based on comparisons of flock sizes and simultaneous counts of birds from prominent lookouts in known areas of condor concentration. These estimates varied considerably and yielded little information on absolute numbers, population composition, or rates of decline. In 1982, however, Snyder, in cooperation with Dr. Eric Johnson of California Polytechnic State University at San Luis Obispo, refined a censusing technique that identifies individual condors in photographs taken throughout the species' range from mid-summer to early fall. Bird identification is based on unique molt patterns in the primary feathers, which do not normally overlap significantly in flight; known individuals, therefore can be counted, and the total population size and structure can be estimated with reliability.

In 1982, when the photographic censusing technique first was used extensively, 13 adult and 7 immature condors were identified in the wild. The following year, an additional adult condor not identified in the 1982 photographs was located, and estimates of total population size in 1982 were increased to include between 21 and 25 individuals. By late March 1984, however, only 15 adult and 2 ring-necked condors (birds 3 to 4 years of age) were known to exist in the wild. One condor, a dark-headed male that fledged in 1981, was taken into captivity in 1982, and three other condors are known or assumed to have died since the 1982 census.

Research on Surrogates

Other aspects of the FWS/NAS condor research program, particularly telemetry of radioed birds, captive propagation, and release of captive-bred California condors, require "hands-on" activities with live animals; therefore, preliminary research on closely-related surrogate species was conducted to develop or define safe and effective methods for handling and manipulating large vultures.

Extensive surrogate studies on Andean condors (*Vultur gryphus*), a species from South America that then was not considered endangered, began at PWRC in 1966. These research efforts, currently under the direction of Dr. James W. Carpenter, have refined methods to increase condor egg production and annual breeding by removing eggs and chicks from wild nests at specified times. Other techniques have been devised to cross-foster eggs and chicks between pairs, stimulate breeding in previously inactive pairs, and rear chicks by hand. In addition, the surrogate research has allowed preliminary evaluation of capture, marking, banding, and telemetry techniques for large vultures, and provided information on condor husbandry and biology.

Dr. Stanley Temple and Michael Wallace of the University of Wisconsin conducted additional research on Andean condors in Peru from 1979 to 1982 to develop techniques to capture and handle cathartid vultures, release captive-reared condors (which were provided by PWRC, the Bronx Zoo, and other facilities), and monitor survival and movements of the released birds through radio-telemetry. Temple and Wallace's data were supplemented by studies on trapping and handling of lappet-faced vultures (*Torgos tracheliotus*) in Africa and turkey vultures (*Cathartes aura*) in California. In addition, research on surrogate species by personnel at the San Diego Zoo led to refinement of white blood cell chromosome analyses to sex California condors, which, unlike Andean condors, show no sexual dimorphism.

Radio-telemetry

Research on surrogate species enabled the FWS and NAS to initiate a telemetry program for the California condor during the past 2 years. In late 1982, four free-flying California condors were captured with cannon nets at baited trap sites in the condor's foraging range. The first, a ring-necked male, was trapped in mid-October, equipped with patagial tags and solar-powered radio transmitters, and released two days after capture. Two adult condors were trapped a month later and identified through feather patterns as the only pair to fledge a chick in 1982. The male was tagged and fitted with one solar-powered radio and a second solar radio

with a lithium battery attachment before release; the female, however, was released without marking. The fourth bird, a dark-headed male that was underweight when trapped in early December, lost weight steadily while being held for sex identification, and ultimately was retained at the Los Angeles Zoo to add genetic diversity to the captive flock. An additional seven birds (including the mate of the radioed adult male, two males, and a female from three other pairs, an unmated adult male, and two immature ring-necked birds) were trapped, radioed, and released in October, November, and December 1984.

The movements of the radioed condors have been monitored since the birds' releases through the combined efforts of mobile ground crews, an aerial tracking team, and, most recently, an automatic tracking tower system. Only one radioed bird, the immature condor trapped in 1982, has died since the telemetry program began; the bird's functional radio greatly assisted in recovery of the carcass for immediate necropsy and determination of death. The seven other radioed birds appear healthy, and their transmitters have caused no noticeable behavioral changes.

The two birds radioed in 1982 have provided extensive data on condor ecology, behavior, habitat use, and limiting factors that, in combination with data collected in the future, will allow for more effective management of the condor population and reduction of major mortality factors. Both radioed birds fed approximately two to three times per week, generally on the carcasses of cattle (calves), deer, and sheep; after-

birth from calving; and deer or wild pig gut piles. The birds were observed soaring, roosting, and feeding with other condors, and their interactions with golden eagles, turkey vultures, and other species at carcasses were documented. Telemetry enabled intermittent observation of the relationships between the radioed adult male, his mate, and their 1982 fledgling. It also made possible observation of the relatively rapid change in the immature radioed male's head coloration from ring-necked in fall 1982 to fully orange-pink color by fall 1983.

Documentation of the seasonal patterns of land use by condors has identified foraging and roosting habitat that should be protected from development or other changes in land use practices, and has located suitable sites for future releases of captive-reared condors. Radioed birds exhibited seasonal use of several foraging areas, feeding extensively, at different times of the year, on the Carrizo Plains in San Luis Obispo County, on the Hudson and Snedden Ranches in southern Kern County, and in the upper Santa Ynez Valley. Roosts used by the radioed birds were located near the foraging grounds or in Santa Barbara County. In addition, the immature male made extended trips into northern Kern County near Glennville and into the foothills of central Tulare County southeast of Lake Kaweah where other immature condors also were observed. These northern areas were not known to support a number of condors during the winter; however, the Kern County area apparently was used as a primary winter foraging area by most of the immature condors in the wild population.

Mortality Factors

The immature male radioed in 1982 was found dead in the Blue Ridge roosting area of Tulare County in March 1984. Rapid recovery of the carcass shortly after death was possible only because of the bird's functional transmitter and the skill of tracking crew members Larry Riopelle and Jesse Grantham of the NAS. Death was found to be due to chronic lead poisoning. The bird had elevated concentrations of lead in the blood and body tissues, and a misshapen piece of lead that was part of a copper-coated lead bullet was found in the gizzard.

A second fresh condor carcass, identified as the yearling that fledged from the nest in Santa Barbara County in September 1982, was found on the boundary of the Los Padres National Forest in November 1983. The bird, which necropsy revealed was a female, had been independent of its parents

continued on page 10



Research on the closely-related Andean Condor has allowed development of techniques used in the California condor and recovery program.

Condor

continued from page 9

(the radioed adult male and its mate) since late March 1983 and was flying and foraging without apparent difficulty. Tissue samples contained no strychnine or Compound 1080, and only low levels of various metals and organochlorines. However, fluorescent particles similar or identical to the tracerite added to M-44 cyanide capsules used for coyote control were present in the condor's oral cavity, and tissues contained cyanide levels higher than those in the tissues of the condor that died of lead poisoning.

Nest Observations

FWS/NAS condor research includes observation of the species' reproductive behavior to determine breeding chronology and removal of eggs and chicks from wild nests to increase productivity. Four active condor pairs were known to exist in the wild when intensive nest observations began in 1980. Two additional pairs were located in late 1980 and May 1983, and a seventh pair that previously had been observed only in photographs was found nesting in a tree cavity by Forest Service personnel in March 1984. This represents only the second instance of tree cavity nesting documented for California condors.

Two of the pairs located in 1980 either lost a member or separated between 1982 and 1983. Both pairs experienced difficulties copulating and failed to produce eggs during the observation period. Observations of the nesting activities of the three other condor pairs known to be reproductively active from 1980 to 1982 proved that California condors often produce replacement eggs if earlier clutches are lost, and that they can breed in the year following successful fledging of a chick. In the latter case, however, eggs produced the second year generally are laid late in the breeding season and only in years after early fledging of young. These observations have encouraged condor researchers to selectively remove first-clutch eggs and, when warranted, second clutch eggs and pre-flight nestlings from wild nests to stimulate production.

— end of part one —

Next month's BULLETIN will conclude this special report on current efforts to conserve the California condor. Advances in increasing condor production and building a captive-breeding flock will be summarized.

Seven Plants

continued from page 7

herb with hairy stems, ovate leaves, and inconspicuous flowers. It is found in transitional areas between hammocks and rock pinelands, and on beach ridges in saline coastal areas. This species formerly occurred from the Miami area to the lower Florida Keys. The only known remaining populations occur at four sites in Everglades National Park (Dade County) and one site on Big Pine Key (Monroe County). Habitat destruction or modification threatening *Euphorbia garberi* has been caused by residential and commercial development, increased competition and shading-out by more aggressive plant species, and storms or hurricanes.

Two of these five Florida rockland plants, *Euphorbia deltoidea* ssp. *deltoidea* and *Euphorbia garberi*, could be affected by Federal activities. The former occurs on or near lands under the jurisdiction of the U.S. Army, Navy, and Coast Guard. Any future activities undertaken by these agencies involving modification or removal of pineland habitat in Dade County could have a detrimental effect on this vulnerable plant. *Euphorbia garberi* occurs in Everglades National Park where park management includes prescribed burning of pinelands in areas where the species is located. This habitat management technique is aimed at maintaining pinelands by preventing vegetational succession to hardwoods, and current burning schedules should benefit the species. No monitoring of *E. garberi* is currently being done in the park, but listing this species will focus increased attention on its status.

Comments on this proposal are welcome and should be sent to the Endangered Species Field Station, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207, by January 7, 1985.

Critical Habitat

Critical Habitat is not being designated for any of these seven plants at

this time. A listing alone highlights the rarity of a species and, along with the required publication of detailed location maps that are part of such a designation, the plants would become vulnerable to taking by collectors and to vandalism. The Federal agencies (U.S. Forest Service; TVA; U.S. Army, Navy, and Coast Guard; and the National Park Service) involved in managing the habitat of some of these species have been informed of their locations and are aware of the importance of protecting them.

Effects of the Listings if Approved

If these proposals are made final, all seven plants will receive the protection authorized by the Endangered Species Act of 1973, as amended. Conservation measures provided to species listed as Endangered and Threatened under the Act include recognition of their precarious status, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Under Section 7 of the Act, Federal agencies would be required to consult with the Fish and Wildlife Service to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of the listed species by directly affecting them or by degrading their habitats.

In addition, interstate and international trafficking in these plants without a permit will be prohibited, with certain exceptions, if they are listed. For the species proposed as Threatened, properly documented seeds of cultivated specimens are exempt from this prohibition. Section 9 of the Act makes it unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction, and this protection will be extended to Threatened plants once implementing regulations are completed. The species that occur on lands under Federal jurisdiction that are part of these proposals are *Pityopsis ruthii*, *Euphorbia deltoidea* ssp. *deltoidea*, and *Euphorbia garberi*.

Regional Briefs

continued from page 2

Threatened fish species in both the United States and Mexico.

* * *

On October 14, a sick whooping crane (*Grus americana*) was observed by Dr. Rod Drewien on the Bosque del Apache National Wildlife Refuge (NWR). The bird did not feed for 2 weeks and FWS personnel decided to capture it on November 28. After its capture, a veterinarian's examination yielded a preliminary diagnosis of a

bacterial infection in the ears and air sacs. The infection has now been diagnosed as a form of fowl cholera. Some acute strains of cholera are responsible for large die-offs of waterfowl, but this more chronic form offers good opportunity for recovery. The crane is now undergoing treatment at the Rio Grande Zoo in Albuquerque, New Mexico, and appears to be responding well. Plans are to release the bird when it recovers.

An injured whooping crane was captured near Linton, North Dakota, in early November by Dr. Drewien and personnel from the FWS regional office in Denver, Colorado, and the North Da-

kota State Game and Fish Department. The bird was transported to the National Zoo in Washington, D.C., for treatment of a compound fracture in the mid-section of its left wing, an injury that may have occurred from a collision with some object. The crane is recovering satisfactorily at the Patuxent Wildlife Research Center in Laurel, Maryland, but veterinarians believe it is unlikely that the injured bones will heal sufficiently to permit a safe release of the bird back into the wild.

As of late November, the whooping crane population at Aransas NWR in Texas totalled 81 birds, including 14 young. In mid-November, a dead whooping crane was recovered on the refuge. The cause of death may have been an avian predator, possibly a great horned owl. An aerial survey on November 28 of the other wild whooping crane population, the Grays Lake NWR/Bosque del Apache NWR flock, located a minimum of 29 whooping cranes in New Mexico, 13 of which were on Bosque del Apache NWR, and several were believed to be still in Colorado.

* * *

Jack B. Woody, FWS National Sea Turtle Coordinator, went to Cancun, Mexico, in early November to participate in the 9th Annual MEXUS-Gulf research meeting to discuss current and future plans for management and conservation of international fishery resources in the Gulf of Mexico. The interagency/international Kemp's Ridley sea turtle (*Lepidochelys kempii*) project is a major activity of MEXUS-Gulf.

* * *

Region 3—A very successful freshwater mussel workshop was recently organized by the Michigan Nature Conservancy and directed by Dr. David Stansbery of Ohio State University. Attendees included biologists from the Michigan Department of Natural Resources and other Michigan and Federal agencies. Special emphasis was placed on mussel identification, survey methods, conservation strategies, and survey needs. Species of both State and Federal concern were discussed, as well as potential additions to the Federal candidate species list. The numerous non-malacologists present were noticeably interested in the discussions, and arrangements were made to provide follow-up field training in survey techniques. It is anticipated that distribution and status data will increase as a result of these sessions.

* * *

Preliminary bald eagle (*Haliaeetus leucocephalus*) production counts in the Region 3 States indicate that a greater number of eagles attempted to nest this year, but also that the number of young produced declined slightly. Active nests

in 1983 totalled 546 with 681 young produced. In 1984, there were 599 nests, but the number of young produced was 657. In Minnesota, the number of active nests was the highest recorded since the counts began in 1973.

* * *

Region 4—A team of biologists with the Service and the Alabama Department of Conservation and Natural Resources recently made an unprecedented effort to save Perdido Key beach mice (*Peromyscus polionotus trissyllepsis*) living on a 4-acre, privately owned beach area of Perdido Key in Baldwin County, Alabama. The property is soon to be bulldozed for condominium development. Between October 15 and October 24, the team set over 600 live traps nightly among the sea oats on primary sand dunes in an effort to safely remove the mice before the bulldozers arrived. Despite the team's efforts, totalling over 4000 "trap-nights," only three beach mice (two young females and one young male) were trapped; 25 cotton rats and two house mice also were taken but released. The beach mice were taken to the University of Mississippi's Rodent Lab where they are being kept pending a decision by the Service on whether the animals should be released into a safe habitat in the wild or kept at the lab for breeding purposes. During its stay at the lab, one of the young females gave birth to two young that unfortunately died several days later.

The Perdido Key beach mouse was proposed for listing as Endangered on June 7, 1984. It is known to occur only on the Alabama end of Perdido Key, where no more than 26 are thought to survive.

* * *

The effort to recover the Florida panther (*Felis concolor coryi*) suffered a setback recently. On November 2, a young adult male was struck by a vehicle on the Tamiami Trail, which runs between Naples and Miami. The panther suffered two broken hind legs and one broken hind foot, and was taken to the School of Veterinary Medicine at the University of Florida in Gainesville where it will recuperate for about 8 weeks. Current plans are to release the animal with a radio-collar in the area where it was found. An interesting note is that the highway and habitat conditions on this stretch of the Tamiami Trail are similar to those on State Road 29, just east of Naples, where several other panthers have been hit by automobiles. There are plans to correct some of these problems on State Road 29 to help eliminate similar highway fatalities.

On October 20, the opening day of muzzle-loader hunting season, a female panther was shot and killed in the Corbett Wildlife Management Area of

Palm Beach County by a hunter in a tree stand. The individual was later arrested by the Florida Game and Fresh Water Fish Commission.

* * *

Populations of *Dicerandra immaculata* (Lakela's mint) continue to decline due to commercial and residential development. *Dicerandra immaculata* occurs only at a few sites in Indian River and St. Lucie Counties, Florida. A private research organization has expressed an interest in working with The Nature Conservancy, the FWS, and The Florida Native Plant Society to conserve Lakela's mint. Personnel from the Service's Jacksonville, Florida, Endangered Species Field Station will be working with the research organization's land manager. This species was proposed for listing on July 23, 1984.

* * *

The single known locality for *Clematis socialis* was recently visited by the FWS botanist in the Jackson, Mississippi, Endangered Species Field Office. This recent addition to the candidate plant list is represented by only a few known colonies located on and adjacent to a roadside right-of-way in northeast Alabama. The population has previously been affected by mechanical/herbicide use in routine roadside maintenance. Additional threats to the species include the encroachment of residential development on contiguous lands, and its extreme vulnerability due to its small population size and restricted range. A status review will be undertaken to determine if a listing proposal is warranted.

* * *

Region 6—The peregrine falcon recovery program continues to move forward. More peregrine falcons were hatched and raised last spring and summer than ever before. The Peregrine Fund, Inc., hatched 134 peregrines at Fort Collins, Colorado, and successfully raised 131 birds. Of those 131 birds, 120 were released into the Rocky Mountains. Many returning peregrines have been reported, and some released birds produced the first known wild young for many years in Montana and Wyoming.

* * *

The Interagency Grizzly Bear Committee (IGBC) met in Denver on October 31 and November 1, 1984, to discuss the following topics: ongoing and proposed research activities; reports from the various committee chairmen; a review of the 1984 bear sighting data, mortalities, and management actions; the need for future revision of the recovery plan; a review of the report on this year's human fatality in Yellowstone National Park; and the grizzly bear habitat symposium being proposed by the For-

continued on page 12

Regional Briefs

continued from page 11

est Service. An update on the interagency law enforcement effort and a demonstration of a computer modeling program were also presented to the IGBC. The model is intended to determine the cumulative effects associated with changes in habitat and management for free-ranging grizzly bears.

More grizzly sightings were reported in the Yellowstone National Park area during 1984 than in any of the past 10 years (over 1,236 sightings of a population believed to number fewer than 250 bears), but biologists agree that the number of bear-human encounters occurring there this year has not been unusual.

News media interest in the grizzly has greatly intensified in recent years, and has made bear-human encounters much more visible. Biologists also attribute grizzly sightings to the fact that bears have moved into different areas this year due to a scarcity of such natural food sources as white bark pine nuts and berries. More grizzly sightings have also been noted this year in British Columbia, north of Glacier National Park, than in the past 30 years, and more than 30 grizzlies were killed this year in that province.

Increased interagency law enforcement seems to be paying off in the Yellowstone ecosystem. To date, no case of illegal take of a grizzly bear is known for 1983 or 1984 within the ecosystem, although two grizzly deaths remain under investigation. The IGBC hopes soon to see similar intensive patrolling efforts in the northern ecosystem in Montana.

The IGBC also received verbal report updates on several ongoing research

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	19	19	233	4	0	22	297	21
Birds	59	13	144	3	1	0	220	53
Reptiles	8	6	60	8	4	13	99	16
Amphibians	5	0	8	3	0	0	16	6
Fishes	29	4	11	14	3	0	62	36
Snails	3	0	1	5	0	0	9	7
Clams	22	0	2	0	0	0	24	14
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	4	0	0	12	9
Plants	66	5	1	9	2	2	85	33
TOTAL	223	47	460	51	10	37	828	196**

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

** More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 164

Number of species currently proposed for listing: 32 animals
37 plants

Number of Species with Critical Habitats determined: 66

Number of Cooperative Agreements signed with States: 41 fish & wildlife
14 plants

November 30, 1984

projects. One such study has indicated that nonmotorized recreation does have a significant effect on the movement of grizzly bears. Results of another study show that temporary baiting of grizzly bears away from problem areas is not a panacea and may actually create more problems. Because of the grizzly's apparently long memory, it is probable that bears will return to the previously baited area the following year in their search for food.

Persons with any questions or a need for additional information on the grizzly bear protection effort are invited to con-

tact Dave Fleming (FTS 776-7531 or commercial 303/236-7531) in the Region 6 office.

* * *

Region 7—An American peregrine falcon banded as a fledgling last summer on the Porcupine River was recaptured in October at Back Bay NWR in Virginia. Of 1,089 fledglings banded in Alaska since 1979, 60 have been recovered (34 during migration and 26 on the Alaska nesting areas). This is the first recovery of an Alaskan-banded American peregrine falcon east of the Mississippi River.

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ENDANGERED SPECIES

Technical Bulletin

Department of Interior, U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

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1984 Index

January, 1984 - December, 1984
Volume IX, Numbers 1-12

PUBLIC DOCUMENTS
DEPOSITORY ITEM

JUL 18 1985

CLEMSON
LIBRARY

Acanthomintha obovata ssp. duttonii, proposed E, photo, Jul, 1
Aerodramus vanikorensis bartschi. See Swiftlet, Vanikoro or gray
Agave, Arizona. See Agave arizonica
Agave arizonica, E listing, Jun, 8
Ailuropoda melanoleuca. See Panda, giant
'Akialoa, Kaua'i, recovery plan, possible extinction, Apr, 4
Alaska: media attention to endangered species program, Apr, 11; remote-area candidate species to be restudied, Nov, 10
Albatross, short-tailed, AK sightings, Jan, 7
Alligator, American: final CITES export rule on FL, LA populations, Mar, 7; TX draft management plan, Mar, 2; FL population proposed reclassification to "Similarity of Appearance" T, secure status, restricted harvesting, Jul, 5, 8
Alligator mississippiensis. See Alligator, American
Allium aaseae, BLM postpones site sale, Feb, 2
Alopex lagopus. See Fox, Arctic
Amblyopsis rosae. See Cavefish, Ozark
American Association of Zoological Parks and Aquariums, Species Survival Plan, Nov, 2, 4
Ammodramus henslowii houstonensis. See Sparrow, Texas Henslow's
Ammospiza maritima nigrescens. See Sparrow, dusky seaside
Amorpha crenulata, proposed E, Dec, 7
Amsinckia grandiflora, proposed E, reproductive system, photo, Jun, 3, 10
'A'o, recovery plan, photo, Apr, 6
Aproteles bulmeri. See Bat, Bulmer's flying fox fruit
Arabis mcdonaldiana, study proposals, Jul, 2
Arctocephalus townsendi. See Seal, Guadalupe fur
Ardea herodias. See Heron, great blue
Asclepias welshii, proposed E, Jul, 1, 4
Ash Meadows, NV: acquisition, conservation plans, Feb, 2; Nature Conservancy purchase, ecosystem, photo, Mar, 5; goldfish removal failure, Apr, 2
Aster, Ruth's golden. See Pityopsis ruthii
Astragalus humillimus, proposed E, Jul, 4-5
Atretium schistosum. See Snake, olive keelback water

Bat, Bulmer's flying fox fruit, E listing, Feb, 5
Bat, bumblebee, E listing, photo, Feb, 6

Bat, ghost, listing not warranted, Feb, 6
Bat, gray, maternity-cave protection, Oct, 5
Bat, Indiana, MA literature survey, Jan, 5-6
Bat, little Mariana fruit, E listing, Sep, 5
Bat, Mariana fruit, E listing, photo, Sep, 5, 6
Bat, Ozark big-eared, recovery plan completed, survey technique, May 10
Bat, Rodriques flying fox fruit, E listing, Feb, 1, 5
Bat, Singapore roundleaf horseshoe, E listing, Feb, 5-6
Bat, Virginia big-eared: recovery plan completed, survey technique, May, 10; maternity colonies surveyed, Aug, 9
Batagur, painted, status review, Nov, 11
Bear, grizzly: fatal attack investigated, backcountry patrols reduce losses, Jan, 3, 7; bow-and-arrow killer sentenced, Feb, 7; Yellowstone ecosystem management, Mar, 2; ecosystems tour, Jun, 7; IGBC meeting, sightings, bear-human encounters, law enforcement, research findings, Dec, 11-12
Beauty, Harper's. See Harperocallis flava
Beetle, Andrews' dune scarab, on invertebrate review list, photo, Jun, 7
Beetle, valley elderberry longhorn, habitat study, Nov, 2
Betula uber: seedlings to be out-planted on USFS lands, Feb, 7; seedlings planted, May, 11; current recovery status, vandalism, Jun, 11; Defenders of Wildlife reward fund for vandalism, Aug, 9; planted populations doing well, Nov, 10
Bidens, cuneate. See Bidens cuneata
Bidens cuneata, E listing, Mar, 1, 7
Birch, Virginia round-leaf. See Betula uber
Birds: recovery plans for Hawaiian, 6 forest species, 2 seabirds, drawings, photos, Apr, 1, 4-8; black market crackdown, traders arrested, raptors seized, Jul, 3; E listing for 7 Mariana Islands species, photos, Sep, 1, 5-6; proposed delisting of 3 Palau species, Oct, 6
Black market in birds, crackdown, Jul, 3
Bobwhite, masked, habitat acquisition hearing, Sep, 7
Boxwood, Vahl's. See Buxus vahlhii
Branta canadensis leucopareia. See Goose, Aleutian Canada
Broadbill, Guam. See Flycatcher, Guam
Buckwheat, clay-loving wild. See Eriogonum pelinophilum
Buckwheat, gypsum wild. See Eriogonum gypsophilum
Bulletin. See Endangered Species Technical Bulletin

Bunting, McKay's, listing petition, Oct, 5
 Butterfly, Bahama swallowtail, delisted, Sep, 5
 Butterfly, bay checkerspot, proposed E, recolonization decrease, Oct, 1, 5-6
 Butterfly, El Segundo blue, habitat rehabilitation, Sep, 2
 Butterfly, Oregon, silverspot, recovery efforts, Feb 2
 Butterfly, Palos Verdes blue, no adults found, May 2
 Butterfly, Schaus swallowtail: reclassified from T to E, Sep, 5; summer survey results, Nov, 10
Buxus vahliei, proposed E, Aug, 5-6

 Cactus, Key tree. See Cereus robinii
 Cactus, Knowlton. See Pediocactus knowltonii
 Cactus, Mesa Verde. See Sclerocactus mesae-verdae
 Cactus, Peebles Navajo. See Pediocactus peeblesianus var. peeblesianus
 Cactus, Thornber's fishhook. See Mammillaria thornberi
 Caiman, black, illegal dealers sentenced, extinction possible, photo, Nov, 6-7
 Camian, yacare, petition findings on delisting, Jun, 9
 Caiman crocodylus yacare. See Caiman, yacare
Callagur borneoensis. See Batagur, painted
Callithrix flaviceps. See Marmoset, buff-headed
Canis lupus. See Wolf, gray
Canis lupus baileyi. See Wolf, Mexican
Canis rufus. See Wolf, red
 Captive populations, zoos' coordinated management plan for red wolf, Nov, 2, 4
Carex specuicola, proposed T, drawing, May, 9
 Caribou, woodland, final E listing, Southern Selkirk Mountain herd, Mar, 4-5
 Cat, Pakistan sand, E listing, Feb, 6
 Catfish, Yaqui, T listing, photo, Sep, 4
Catostomus microps. See Sucker, Modoc
Catostomus warnerensis. See Sucker, Warner
 Cats, spotted, undercover investigation of poaching, smuggling, confiscated pelts, photo, Nov, 7
 Cavefish, Alabama, 10 sighted, Jan, 3
 Cavefish, Ozark; proposed T listing, Feb, 4; census results, new population, Jun, 3; cave protection, census results, Oct, 5; final T, Dec, 6
Cereberus rhynchops. See Snake, dogfaced water
Cereus robinii, final E, photo, Aug, 3-4
Charadrius melodus. See Plover, piping
Chasmistes cujus. See Cui-ui
Chasmistes liorus. See Sucker, June
 Checker-mallow, pedate. See Sidalcea pedata
 Checkoff funds program in MA, photos, Jan, 4-7
 Chelonia mydas. See Turtle, green sea
 Chub, bonytail, conservation vs. Colorado River water-use, May, 11-12
 Chub, Borax Lake, water management plan, Jul, 2
 Chub, Fish Creek Springs tui, proposed T, Jul, 1, 7
 Chub, humpback, conservation vs. Colorado River water-use, May 11-12
 Chub, Hutton tui, proposed T, May, 5, 7
 Chub, Owens tui, proposed E, exotic-fishes threat, photo, Apr, 3, 12
 Chub, Sonora, proposed T, photo, Jul, 7-8
 Chub, spotfin, recovery plan approved, photo, Nov, 8
 Chub, Yaqui, E listing, Sep, 4
Cirsium vinaceum, proposed E, Jun, 10
 CITES. See Convention on International Trade in Endangered Species of Wild Fauna and Flora
Clematis socialis, single known locality, Dec, 11
 Cliffrose, Arizona. See Cowania subintegra
 Clover, running buffalo. See Trifolium stoloniferum
 Cobra, Indian, CITES listing, May 11
 Cobra, king, CITES listing, May, 11
Colinus virginianus ridgwayi. See Bobwhite, masked
 Colobus, Preuss's red, E listing, Feb, 6
Colobus badius preusii. See Colobus, Preuss's red
 Colorado River Conservation Plan controversy, water-use vs. fish conservation, May, 11-12
 Condor, California: chick removed from wild, Nov, 2; advances in research and recovery, population size, radio-telemetry, mortality factors, surrogate research, nest observations, photos, Dec, 8-10
 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): final export rules on Appendix II species, Mar, 7; comments requested on Appendix amendments, Mar, 7; ginseng export approval, Apr, 11; 7 snakes to Appendix III, giant panda moved to I, May, 11; information sought on implementation, Jun, 11
Corvus kubaryi. See Crow, Mariana
Cowania subintegra, E listing, Jun, 8
 Crane, Mississippi sandhill, nesting results, Jul, 6
 Crane, whooping: wintering high count, Jan, 3; death from lead-shot ingestion, Feb, 7; radio tracking of spring migration, Apr, 10; Gray's Lake/Bosque del Apache casualties, May, 10; Aransas hydrocarbons exposure, Jul, 6; Gray's Lake flock management needs, Jul, 7; Coordinator named, possible additional release site, Oct, 4; nesting results from Wood Buffalo and Gray's Lake flocks, Nov, 5, 10; virus blamed for 7 Patuxent deaths, Nov, 6; recent illnesses, injuries, Aransas population count, Dec, 10-11
Craseonycteris thonglongyai. See Bat, bumblebee
Crenichthys baileyi baileyi. See Springfish, White River
Crenichthys baileyi grandis. See Springfish, Hiko White River
Crenichthys nevadae. See Springfish, Railroad Valley
 Critical Habitat, revised designation procedures, Nov, 1, 9
 Crow, Mariana, E listing, photo, Sep, 1
 Cui-ui: and Truckee-Carson River water use, Mar, 2, May, 2-3 spawning migration, river trap, Jun, 2; Marble Bluff spawning, captures, Jul, 6; larvae emigration success, Aug, 2
Cyclura stejnegeri. See Iguana, Mona ground
Cynomys parvidens. See Prairie dog, Utah
Cyprinodon macularius. See Pupfish, desert

 Dace, desert, proposed T, Jun, 4-5
 Dace, Fosskett speckled, proposed T, May, 5, 7
 Dace, Moapa: life history study, Jan, 2; habitat improvement at Moapa National Wildlife Refuge; Apr, 2; 2 new reproductive populations, May, 3; stream rehabilitation for reintroduction, Jun, 2; survey results, Sep, 3, Oct, 2
 Daisy, Maguire. See Erigeron maguirei var. maguirei
 Darter, amber, proposed E, photo, Aug, 1, 10
 Darter, goldline, status review, Aug, 8
 Darter, Maryland, Critical Habitat designated, Sep, 4
 Darter, Niangua, proposed T, photo, May, 4
 Darter, snail: proposed reclassification to T, background, Mar, 6-7; reclassified to T, Aug, 9-10
 Darter, trispot, proposed E, Aug, 10
 Darter, watercress, habitat enhancement, Nov, 10
 Defenders of Wildlife, plant conservation reward fund, Aug, 9
Dermochelys coriacea. See Turtle, leatherback
Desmocerus californicus dimorphus. See Beetle, valley elderberry longhorn
Dicerandra immaculata: site destruction, Jul, 6; proposed E, Aug, 5; continued decline, Dec, 11
Diomedea albatrus. See Albatross, short-tailed
 Dog, African wild, E listing, social system, Feb, 6
 Dogweed, ashy. See Dyssodia tephroleuca
 Dolphin, Indus River, NMFS to determine listing, Feb, 6-7
 Dropwort, Canby's. See Oxypolis canbyi
Dyssodia tephroleuca, final E, Aug, 4

Engle, bald: MA restoration program, eaglets at hacking site, photos, Jan, 5; Chesapeake Bay Recovery Team meeting, Jan, 3; deaths, injuries investigated, OR roost count, Apr, 2, 10; productive AZ season, Apr, 10; Mexico nesting survey, Apr, 10; ME winter feeding study, Apr, 11; 3 new AZ nest sites, May, 10; AZ breeding successes, Jul, 6; Canadian eagles to MA, PA, Jul, 6; Canadian-U.S. hacking totals, Aug, 8-9; Santa Catalina Island releases, Sep, 2; proposed measures to reduce lead poisoning, Oct, 7; Idaho nesting survey tables, Oct, 7; NC nesting first since 1970, Oct, 5; CA status improving, Nov, 2; study of Great-Lakes area nesters, Nov, 10; Region 3 production counts, Dec, 11

Ellipito (Canthyrina) steinstansana. See Mussel, Tar River spiny

Empetrichthys latos. See Killifish, Pahump

Endangered or Threatened species: 5-year review for 1978 listings, photo, Jan, 1; experimental populations regulations, Feb, 1, 3; E listing for 10 foreign mammals, photos, Feb, 1, 5-7; petition findings, status reviews, Feb, 5; notice of review candidate list for 1000+ invertebrate species, categories explained, drawing, photos, Jun, 1, 6-7, 11; updated comprehensive list available, Aug, 3; 9 Mariana Islands species listed, photos, Sep, 1, 5-6; Schaus swallowtail butterfly reclassified from T to E, first such species change, Sep, 5; experimental populations regulations, Sep, 7; revised listing procedures, deadlines for Critical Habitats and petitions, Nov, 1, 9

Endangered Species Technical Bulletin: subscriptions available, Apr, 11

Enforcement: reptile dealers sentenced, Nov, 6; "Operation Trophy Kill" uncovers poaching, smuggling, confiscated pelts, photo, Nov, 7

Enhydra lutris nereis. See Otter, southern sea

Epioblasma [=Dysnomia] sampsoni. See Mussel, Sampson's pearly

Eremichthys acros. See Dace, desert

Erigeron maguirei var. maguirei, proposed E, drawing, Aug, 6

Erigeron rhizomatus, proposed T, May, 8

Eriogonum gypsophilum, recovery plan signed, May, 3

Eriogonum pelinophilum, final E, Aug, 4-5

Etheostoma nianguae. See Darter, Niangua

Etheostoma nuchale. See Darter, watercress

Etheostoma trisella. See Darter, trispot

Euphilotes (=Shijimiaeoides) battoides allyni.

See Butterfly, El Segundo blue

Euphorbia deltoidea ssp. deltoidea, proposed E, Dec, 7, 10

Euphorbia garberi, proposed T, Dec, 7, 10

Euphydras editha bayensis. See Butterfly, bay checkerspot

Experimental populations: proposed regulations, definition of, "essential" vs. "nonessential," Feb, 1, 3; fish reintroductions, Feb, 7; proposed reintroduction of 2 fishes, and a squirrel into former ranges, photos, May, 1, 6-7; regulations approved, Sep, 7; Delmarva fox squirrels released in DL, drawing, photo, Oct, 1, 5-6

Export of wildlife and plants: final rules on CITES Appendix II species, Mar, 7; comments requested on Appendix amendments, Mar, 7

Extinctions, Sampson's pearly mussel, Feb, 3

Falcon, American peregrine, 2 AK-banded captured in TX, other banded-bird encounters, Feb, 8; AK rivers nesting results, Oct, 5; AK-banded bird recaptured in VA, first recovery east of Mississippi River, Dec, 12; see also Falcon, peregrine

Falcon, Arctic peregrine: impact of mine project, Mar, 3; reclassified to T, background, Apr, 1, 3; danger to nest sites from helicopter

pipeline survey, Jun, 11; AK rivers nesting results, Oct, 5; see also Falcon, peregrine

Falcon, Peale's peregrine, background on, Apr, 1, 3

Falcon, peregrine: sighting 1,000 miles at sea, Jan, 2; 3rd year of release program, Jan, 3; background on subspecies, all in 48 states listed E under Similarity of Appearance, falconry regulations, Apr, 1, 3; AK sightings, May, 12; CA eggs transferred for artificial incubation, Jul, 2; poor TX breeding, Jul, 6; hacked pair nests in Los Angeles, Aug, 2; Rocky Mts. recovery efforts, Aug, 9; Yukon survey results, Aug, 9; CA nesting, hacking, cross-fostering, Sep, 2; first TN hacking, Oct, 5; AK rivers nesting survey results, Oct, 5; Padre Island trapping results, Nov, 4; TX helicopter surveys find none, Nov, 5; MN Raptor Rehabilitation Center patients, Nov, 10; ID releases, active eyries in CA, WA, Dec, 2; Peregrine Fund hatchings, releases, Dec, 11; AZ-banded recaptured in VA, Dec, 12; see also Falcon, American peregrine; Falcon, Arctic peregrine

Falco peregrinus antaui. See Falcon, American peregrine

Falco peregrinus pealei. See Falcon, Peale's peregrine

Falco peregrinus tundrius; See Falcon, Arctic peregrine

Fantail, Palau, proposed delisting, Oct, 6

Felis concolor coryi. See Panther, Florida

Felis margarita scheffeli. See Cat, Pakistan sand

Felis pardalis. See Ocelot

Felis yagouaroundi cacomitli. See Jaguarundi

Ferret, black-footed: survey standards, Jan, 7; misidentification, Feb, 8; survey procedures, where required, May, 11; workshop, Jun, 12; research, summer population census, Sep, 8

Fiddleneck, large-flowered. See Amsinckia grandiflora

Fishes: proposed listing for Ozark cavefish, Modoc sucker, Feb, 4; petition findings, Feb, 5; experimental population reintroductions, photos, Feb 7, May, 1, 6-7; proposed T for 4 species, photos, May, 4-5, 7; Colorado River Conservation controversy, May 11, 12; proposed listing for 7 desert relict species, drawing, photos, Jun, 1, 4-5, 9-12; proposed T for 2 more desert, photo, Jul, 1, 7-8; proposed E for 3 Conasauga Basin, photo, Aug, 1, 10; 3 Rio Yaqui listed, photos, Sep, 4

Fleabane, rhizome. See Erigeron rhizomatus

Flycatcher, Guam, E listing, photo, Sep, 1

Four-o'clock, MacFarlane's. See Mirabilis macfarlanei

Fox, Arctic, removals from Canada goose habitat, Jul, 7

Frankenia johnstonii, E listing, Sep, 6-7

Galactia smallii, proposed E, Dec, 7

Gallicolumba canifrons. See Ground-dove, Palau

Gallinula chloropus guami. See Gallinule, Mariana

Gallinule, Mariana, E listing, Sep, 1

Gallotia simonyi simonyi. See Lizard, Hierro giant

Gambusia, Big Bend, rediscovery of "new" populations, Oct, 4

Gambusia gaigei. See Gambusia, Big Bend

Gardenia, Hawaiian. See Gardenia brighamii

Gardenia brighamii, proposed E, background, photo, Nov, 5, 7

Gasterosteus aculeatus williamsoni. See Stickleback, unarmored threespine

Geochelone forsteni. See Tortoise, Celebes

Gila bicolor euchila. See Chub, Fish Creek Springs tui

Gila bicolor snyderi. See Chub, Owens tui

Gila boraxobius. See Chub, Borax Lake

Gila cypha. See Chub, humpback

Gila ditaenia. See Chub, Sonora

Gila elegans. See Chub, bonytail

Gila purpurea. See Chub, Yaqui

Ginseng. See Panax quinquefolius
Glaucomyx sabrinus. See Squirrel, northern flying
Glaucomyx volans. See Squirrel, southern flying
Glaucopsyche lygdamus palosverdesensis. See
Butterfly, Palos Verdes blue
Goetzea, beautiful. See Goetzea elegans
Goetzea elegans, proposed E, background, first known
photo of bloom, Jul, 4
Goldenrod, Blue Ridge. See Solidago spithameae
Goldenrod, Short's. See Solidago shortii
Goose, Aleutian Canada: Japanese zoos receive 18,
Jan, 7; recovery effort result, Feb, 8; CA
storm kills 42, May, 12; Agattu nestings, Artic
fox removals, other successes, Jul, 7; collision
hazard from CA antenna, Aug, 2; Agattu Island
transplantings, other bandings, Sep, 8
Gooseberry, Miccosukee. See Ribes echinellum
Gopherus polyphemus. See Tortoise, gopher
Gouania hillebrandii, E listing, Dec, 6
Ground-dove, Palau, proposed delisting, Oct, 6
Grus americana. See Crane, whooping
Grus canadensis pulla. See Crane, Mississippi
sandhill
Gymnogyps californianus. See Condor, California

Halcyon cinnamomina cinnamomina. See Kingfisher,
Micronesian
Haliaeetus leucocephalus. See Eagle, bald
Harperocallis flava, transplanting permit sought,
Nov, 10
Hawaiian wildlife, recovery plans for 6 forest birds,
2 seabirds, monk seal, descriptions, habitats,
conservation plans, drawings, photos,
Apr, 1, 4-10
Hemignathus lucidus hanapepe. See Nukupuu, Kaua'i
Hemignathus procerus. See 'Akialoa, Kaua'i
Heosemys silvatica. See Turtle, Kavalai forest
Heraclides (Papilio) andraemon bonhottei. See
Butterfly, Bahama swallowtail
Heraclides (Papilio) aristodemus ponceanus. See
Butterfly, Schaus swallowtail
Heron, great blue, MA colony inventory, adults at
nest, photo, Jan, 6
Himantopus himantopus knudseni. See Stilt, Hawaiian
Hipposideros ridleyi. See Bat, Singapore roundleaf
horseshoe
Hoffmanseggia tenella, proposed E, drawing,
Dec, 6-7
Hybopsis monacha. See Chub, spotfin

Ictalurus pricei. See Catfish, Yaqui
Iquana, Mona ground, listing status under review,
photo, Jan, 1
Invertebrates, notice of review lists 1,000+
candidates, categories explained, extinctions,
drawing, photos, Jun, 1, 6-7
Isotria medeoloides, new populations found, Feb, 7

Jaguarundi, TX presence unconfirmed, Jan, 3
Jatropha, Costa Rican. See Jatropha costaricensis
Jatropha costaricensis, final E, Aug, 3

Kama'o, recovery plan, Apr, 4
Kangaroo, eastern gray, withdrawn delisting,
May, 9
Kangaroo, red, withdrawn delisting, May, 9
Kangaroo, western gray, withdrawn delisting,
May, 9
Kaua'i, recovery plan for 6 forest birds, drawings,
Apr, 1, 4-6
Key Largo, FL: proposed E for 2 small mammals,
Mar, 5-6; final E, Sep, 5

Killifish, Pahrump, pond rehabilitation, Oct, 2
Kingfisher, Micronesian, E listing, photo,
Sep, 1, 6
Ladies'-tresses, Navasota. See Spiranthes parksii
Lampsilis higginsii. See Mussel, Higgins' eye pearly
Lanius ludovicianus mearnsii. See Shrike,
San Clemente Loggerhead
Lead-plant, crenulate. See Amorpha crenulata
Lead poisoning of bald eagles, proposed reduction
by "steel shot" zones, Oct, 7
Lentipes concolor. See O'opu alamo'o
Lepidochelys kempii. See Turtle, Kemp's ridley
sea
Lepidomeda albivallis. See Spinedace, White River
Lissemys punctata punctata. See Turtle, Indian
flap-shelled
Listing of species: 5-year review of 1978 listings,
Jan, 1; revised procedures, deadlines for
Critical Habitat and petition responses,
Nov, 1, 9
Lizard, Coachella Valley fringe-toed: protection
efforts, May, 2; Habitat Conservation Plan,
Aug, 2; preserve progress, Sep, 2-3
Lizard, Hierro giant, E listing, Mar, 4
Lizard, Ibiza wall, T listing, Mar, 4
Loggerhead, Conasauga, proposed E, Aug, 10
Loggerhead, reticulate. See Loggerhead, Conasauga
Loggerhead, Roanoke, petition findings, Feb, 5
Lousewort, Furbish. See Pedicularis furbishiae
Lycaon pictus. See Dog, African wild

Macroclmys temminckii. See Turtle, alligator
snapping
Macroderma gigas. See Bat, ghost
Madtom, orangefin, petition findings, Feb, 5
Madtom, smoky, E listing, Nov, 4
Mammillaria thornberi, proposed T, drawing,
May, 8-9
Manatee: Miami Seaquarium birth, Jan, 3; implanted
radio transmitter mistaken for arrow,
May, 10-11; 73 deaths in 1984, Jun, 3, 10;
prototype research/management plan, Jun, 10;
marina-impact studies, Sep, 7; 2 Homasassa
Springs adults relocated, Nov, 10
Mariana Islands, E listing for 9 species, background,
photos, Sep, 1, 5-6
Marmoset, buff-headed, E listing, photo, Feb, 6
Marmot, Vancouver Island, E listing, photo,
Feb, 6
Marmota vancouverensis. See Marmot, Vancouver Island
Massachusetts, nongame checkoff funds program, bald
eagle, turtle restoration, status
investigations, tern management, photos,
Jan, 4-7
Melanosuchus niger. See Caiman, black
Meta dolloff. See Spider, Dolloff Cave
Mice, beach, proposed E for 3 Gulf Coast subspecies,
sand dune habitat destruction, descriptions,
photo, Jul, 3
Microtus abbreviatus fisheri. See Vole, St. Matthew
Microtus californicus scirpensis. See Vole, Amargosa
Milkpea, Small's. See Galactia smallii
Milk-vetch, Mancos. See Astragalus humillimus
Milkweed, Welsh's. See Asclepias welshii
Mint, Lakela's. See Dicerandra immaculata
Mirabilis macfarlanei: recovery work, Mar, 2; new
colonies, Jul, 2, 6
Moapa coriacea. See Dace, Moapa
Moho braccatus. See O'o, Kaua'i
Mollusks, recovery plans for 5, habitats, drawings,
photos, Jan, 1, 8-11
Monachus schauinslandi. See Seal, Hawaiian monk
Moorhen, Mariana. See Gallinule, Mariana
Mouse, Alabama beach, proposed E, Jul, 3
Mouse, Choctawhatchee beach, proposed E, Jul, 3
Mouse, Key Largo cotton: proposed E, Mar, 5-6;
final E, Sep, 5

Mouse, Perdido Key beach: proposed E, Jul, 3; trapping effort failure, Dec, 11
 Mouse, white-fronted. See Mouse, Alabama beach
 Mussel, Higgins' eye pearly: recovery plan, life history, habitat, drawing, Jan, 11; proposed barge-fleeting near habitat, Apr, 10-11
 Mussel, Sampson's pearly, removal from list, extinct, Feb, 3
 Mussel, Tar River spiny, proposed E, photo, Oct, 3, 8
 Mussels: 36 species on Pendleton Island, VA, Oct, 5; workshop on freshwater, Dec, 11
 Mustard, slender-petaled. See Thelypodium stenopetalum
Mustela nigripes. See Ferret, black-footed
Mycteria americana. See Stork, wood
Myiagra freycineti. See Flycatcher, Guam
Myotis grisescens. See Bat, gray
Myotis sodalis. See Bat, Indiana

Naja naja. See Cobra, Indian
Natrix piscator. See Snake, checkered keelback water
 Nature Conservancy; Ash Meadows purchase, Mar, 5; plant surveys, Sep, 8; Cave Springs Cave purchase, Oct, 5
Neotoma floridana smalli. See Woodrat, Key Largo
Nerodia harteri. See Snake, Harter's water
 Niterwort, Amargosa. See Nitrophila mohavensis
Nitrophila mohavensis, specimens from new locality, May, 2
 Notice of Review. See Review
Notropis, sp. See Shiner, Cahaba
Notropis formosus. See Shiner, beautiful
Notropis simus pecosensis. See Shiner, Pecos blunt nose
Notropis simus simus. See Shiner, Rio Grande bluntnose
Noturus baileyi. See Madtom, smoky
Noturus gilberti. See Madtom, orangefin
 Nukupu'u, Kaua'i, recovery plan, drawing, Apr, 4

 Ocelot: radio-tracking results, female nursing third time, Jan, 3; male dead, Mar 3; 3 more captured, Sep, 3, 7; road kills, Oct, 2
 Onion, Aasea's. See Allium aaseae
 'O'o, Kaua'i, recovery plan, drawing, Apr, 4
 O'opu alamo'o: stream relocation proposal, Jun, 2; spawning report in error, Sep, 3
Ophiophagus hannah. See Cobra, king
Orthalicus reses reses. See Snail, Stock Island tree
 Otter, southern sea, CA census, Dec, 2
 'O'u, recovery plan, drawing, Apr, 5
 Owl, Palau, proposed delisting, Oct, 6
Oxyopsis canbyi, channelization threat, Oct, 5

 Pacific Island Forest Birds Survey, Aug, 2
 Palau birds, proposed delisting, Oct 6
Panax quinquefolius: IL export approval, Apr, 11; wider export approvals proposed, drawing, Aug, 7
 Panda, giant: E listing, photo, Feb, 1; CITES Appendix I listing, May, 11
 Panther, Florida: highway threat, Jul, 6; one hit by vehicle, one shot, Dec 11
Pedicularis furbishiae, new populations to be established, Nov, 10
Pediocactus peeblesianus var. peeblesianus, recovery plan signed, May, 3
Pediocactus knowltonii, habitat fenced, Jun, 2
 Pelican, brown: perpetrator of mutilation apprehended, Feb, 7; CA census, Dec, 2
Pelicanus occidentalis. See Pelican, brown

 Pendleton Island, VA, mussel and fish survey results, Oct, 5
Percina antesella. See Darter, amber
Percina aurolineata. See Darter, goldline
Percina rex. See Logperch, Roanoke
Percina tanasi. See Darter, snail
Peromyscus gossypinus allapaticola. See Mouse, Key Largo cotton
Peromyscus polionotus ssp. See Mice, beach
 Petitions, revised deadlines for response to, Nov, 9
 Petrel, Hawaiian dark-rumped, recovery plan, drawing, Apr, 6-7
Phaeognathus hubrichti. See Salamander, Red Hills
Phaeornis obscurus myadestina. See Kama'o
Phaeornis palmeri. See Puaiohi
Phrynops hodgei. See Turtle, Brazilian sideneck
Pipilo fuscus eremophilus. See Towhee, Inyo brown
 Pitcher plant, Alabama cane-brake. See Sarracenia rubra ssp. alabamensis
 Pitcher plant, green. See Sarracenia oreophila
Pityopsis ruthii, proposed E, water degradation threat, drawing, photo, Dec, 1
Plagopterus argentissimus. See Woundfin
 Plants: E listing for 2 Hawaiian, Mar, 1, 7; proposed T for 4 western, habitat degradation, drawings, May, 1, 8-9; proposed listings for 3, photos, Jun, 8, 10; E listing for 2 Arizona, Jun, 8; first Puerto Rican proposed E, first known photo of beautiful goetzea bloom, Jul, 4; 13 Delmarva-bay and pine-barrens candidates, range-wide survey, Sep, 8; 3 western E listed, Sep, 6-7; proposed listing of 7 southern U.S., FL pine rockland included, drawings, photo, Dec, 1, 6-7, 10
Platanista indi. See Dolphin, Indus River
Platemys pallidipectoris. See Turtle, Chaco sideneck
Plecotus townsendii ingens. See Bat, Ozark big-eared
Plecotus townsendii virginianus. See Bat, Virginia big-eared
Plectrophenax hyperboreus. See Bunting, McKay's
 Plover, piping: MA survey results, Jan, 6-7; proposed T for 2 breeding populations, E for Great Lakes, habitat degradation, photo, Dec, 4-5
Podarcis pityusensis. See Lizard, Ibiza wall
Poeciliopsis occidentalis. See Topminnow, Gila
 Pogonia, small whorled. See Isotria medeoloides
 Polygala, tiny. See Polygala smallii
Polygala smallii, proposed E, drawing, Dec, 7
Polygyris virginiensis. See Snail, Virginia fringed mountain
 Prairie chicken, Attwater's, recovery plan approved, Jan, 3
 Prairie dog, Utah, reclassified to T, overpopulation, taking regulation to prevent illegal poisoning, Jun, 7-8
 Primrose, Maguire. See Primula maguirei
Primula maguirei, proposed T, May, 1, 8
 Pronghorn, Sonoran, one male dead, Sep, 3
Pseudemys felis. See Turtle, Cat Island
Pseudemys malonei. See Turtle, Inagua Island
Pseudemys rubriventris bangsi. See Turtle, Plymouth red-bellied
Pseudemys scripta callirostris. See Turtle, South American red-lined
Pseudocotalpa andrewsi. See Beetle, Andrews' dune scarab
Psittirostra psittacea. See 'O'u
Pterodroma phaeopygia sandwichensis. See Petrel, Hawaiian dark-rumped
Pteropus mariannus mariannus. See Bat, Mariana fruit
Pteropus rodricensis. See Bat, Rodrigues flying fox fruit
Pteropus tokudae. See Bat, little Mariana fruit
Ptyas mososus. See Snake, Indian rat
Ptychocheilus lucius. See Squawfish, Colorado
 Puaiohi, recovery plan, drawing, Apr, 1, 4
 Puerto Rico, first plant proposed E, Jul, 4
Puffinus auricularis. See Shearwater, Newell's Townsend's
Puffinus newelli. See Shearwater, Newell's Townsend's

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